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THE supply of natural gas in the Indiana field seems to be rapidly becoming exhausted. In the beginning the supply of gas for Indianapolis was obtained from a point but about 20 miles distant from that city; now it is said to be necessary to bring it about 40 miles, from wells within a few miles of the center of the field. Strenuous efforts are being made to secure the adoption of the meter system to prevent the great waste of gas which occurs where consumers are permitted to use all the gas they wish for a fixed annual amount. Unless this is done the State authorities assert that a supply of natural gas from the Indiana fields can be depended upon but a few years longer.

Greater economy is now being practised in Pittsburg and vicinity, but even in Pennsylvania the production of natural gas is steadily diminishing and the number of consumers who are returning to the use of coal is rapidly increasing. As the gas-holding rock strata of these regions have now been quite thoroughly explored, it is unlikely that new fields of consequence will be found, and we shall undoubtedly see, henceforth, a constantly increasing restriction in the flow of natural gas which has played so important a part in the recent industrial growth of western Pennsylvania, Ohio and Indiana.

THE predictions of good crops in the United States, this season, have been fulfilled; and it is now certain that the harvest of 1891 will be greater than for many years. The recent frost in the western and northern central states apparently did little damage, and the wheat crop is now out of danger. The same is true, according to the last bulletin of the Weather Bureau, of the corn in the more southern states while, further north, from 10 days to a fortnight will be necessary to assure the harvest. With the failure of the crops abroad prices have risen, so that the American farmer will experience a season of unusual prosperity, which will, of course, make itself felt in all branches of industry. Already are its effects becoming apparent in the markets. Railway shares are rising, and Wall street is more active than it has been for years. Even the iron market, which has been passing through a period of unparalleled stagnation, is beginning to give evidence of increasing firmness, the preliminary, we may hope, to an upward movement. With the current week the return flow of gold to this country has set in, about $1,000,000 having been shipped from the other side of the Atlantic. That this will continue until the unusual drafts from this country during the first six months of the year have been made good, seems probable. Everything now points to a period of general business activity in the United States.

THE Pittsburg Reduction Company, of Pittsburg, Pa., is manufacturing a new aluminum alloy which promises to be of considerable industrial importance. It is an alloy of aluminum and titanium, discovered and patented by Prof. J. W. LANGLEY, which possesses a remarkable degree of hardness—not so much in the cast form as when the metal is rolled or otherwise worked. Tools can be made of this alloy with a cutting edge which will hold nearly as well as of steel. At the same time the metal has a resilience and spring which will make it of very considerable use for many purposes. The specific gravity of the new alloy is not much greater than that of pure aluminum. The amount of titanium used is very small. Indeed, when the proportion of this element exceeds 10 per cent., the alloy is too brittle for ordinary uses. The selling price of the new alloy is from 25 cents to $1 per pound over that of pure aluminum.

The subject of aluminum alloys offers an especially rich field for investigation, in which comparatively little has yet been done. The properties of aluminum bronzes are fairly well understood from the investigations of the Messrs. COWLES in that direction, but the effect of nickel, chromium, tungsten, and other metals upon aluminum is practically unknown. It is quite likely that some of these metals will make up the deficiencies of pure aluminum, and that the dreams of an aluminum age, which enthusiasts have expressed, may, in this manner, some day be realized.

## THE LOOT OF THE COMSTOCK MINES.

The *Criterion*, of San Francisco, in its July issue, refers to "the loot of the Comstock mines," and describes the swindling methods of the Comstock mill ring, so often recorded in the ENGINEERING AND MINING JOURNAL. It properly attributes to the proxy system of voting for boards of dummy directors the possibility of carrying on the outrageous frauds which have made Comstock management a "stench in the nostrils of all honest men" and a curse to the legitimate mining industry.

The *Criterion* well says that the language with which the ENGINEERING AND MINING JOURNAL has characterised the mill ring is "strong." We are perfectly aware that it is libelous if not true, and since we have given the several members of the ring every opportunity to show this, their silence under these exposures must convince everyone that the accusations are true. The fact is that but a small part of the truth has as yet been told about the Comstock mill ring and the acts of those connected with it in one way or the other. There are indications that the United States Senate will not much longer prove a safe asylum for members of the Comstock ring, and it is to be hoped that the mint at Carson may be relieved from the ominous shadow that has for a long time hung over it.

## THE BROKEN HILL PROPRIETARY COMPANY.

The reports of the Broken Hill Proprietary Company, of New South Wales, operating the largest silver-lead mine in the world, are always of interest, the last, for the six months ending May 31st, 1891, no less so than its predecessors. In this half year the production of the company was greater than ever before in its history, amounting to 4,918,124 ounces of silver and 23,624 tons of lead. For the past two years its output has been as follows:

| | Tons of ore treated. | Silver. oz. | Lead. tons. | Value of product. |
|---|---|---|---|---|
| Nov. 30, 1889 | 88,639 | 3,325,613 | 13,659 | £745,000 |
| May 31, 1890 | 103,399 | 3,855,331 | 15,490 | 873,000 |
| Nov. 30, 1890 | 103,912 | 3,872,516 | 14,939 | 975,000 |
| May 31, 1891 | 138,645 | 4,918,124 | 23,624 | 1,136,000 |

The company had on May 28 a silver reserve of 202,151 oz., representing £33,335, after deducting charges for realization. The total convertible assets amounted to £212,355. Operations for the half year showed a profit of £613,382, out of which £22,526 was written off for depreciation, £19,981 expended on construction account, and £576,000 paid in divi-

dends. In the preceding half year the dividends paid amounted to £528,000, while for the half years of 1889-90 they were £368,000 and £464,000 respectively. The total amount of dividends paid by the company since its organization has beeen £2,278,000, while £592,000 has been distributed in cash bonuses, making a grand total of £3,320,000, and £5,064,000, nominal value, in the shares of subsidiary companies.

The deficiency in the supply of water continued to be a source of grave anxiety to the company during the year, and it was necessary to shut down the concentrating and leaching plants; blowing out the furnaces was, however, avoided, although there were several stoppages of individual furnaces on account of injury to the jackets from the highly mineralized water which had to be used. The directors of the company are confident, that they have now secured an adequate supply of water, although the rainfall during the present year has been small.

Important additions have been made to the metallurgical works of the company during the past year. A contract has been let for the construction of a 60-stamp amalgamation mill for the treatment of a class of ore which can not be profitably reduced in any other manner, and the removal of which from the mine is an imperative necessity to admit of systematic and economical development. A furnace has been erected at the refinery, at Port Pirie, which will reduce about 200 tons of ore per week in addition to the dross from the bullion for which it was especially designed. Messrs. HOWELL and SCHLAPP, of the company's staff, are now, in connection with Professor SCHNABEL, engaged upon an investigation of the most economical and efficient method of treating the sulphide ores of the mine.

At present a force of 2,545 men is employed at the Broken Hill mine. The capital of the company, £384,000, is divided into 960,000 shares of 8s. each. The present market value of the shares is about £9,600,000, upon which basis an investment yields about 11.5 per cent.

## RECENT MINING EXCITEMENTS.

The present year seems to be unusually prolific of mining excitements in the Far West. During the past month two new ones have blazed forth, the scene of one being the Pine Nut district in Nevada, and that of the other, La Plata in Utah. Concerning the former, there is considerable mystery, as the tunnel in which the original (and so far, apparently, the only important) discovery was made is barricaded, and none but those interested are allowed to examine the breast. The stories of the wealth exposed there are, however, comparable only to the tale of Aladdin's cave. As was to be expected, there has been a rush from other mining camps of Nevada to the new district. Claims have been located in all directions, and with customary promptness several companies with large capital stocks have been organized in San Francisco to exploit property in the new field. Pine Nut is located in Douglass County, and is but a short distance from Austin.

La Plata camp, in Bear Gulch, Cache County, Utah, about 25 miles northeast of Ogden, has been heralded as a new Leadville. Ore was discovered at this place about one month ago by a sheep-herder, whose sheep wore a path denuding the outcrop of a vein of rich lead ore. From the La Plata claim, located on this vein, the town which has since been established takes its name. This discovery being near Ogden and Salt Lake City, a stampede to the locality immediately followed the first news. It is estimated that within a week there were 500 men in Bear Gulch, where a town site had been laid out, saloons and gambling-houses had been put in full blast, and, according to press reports, the place had taken on the look of a typical Western mining camp of five-and-twenty years ago.

The original discovery at La Plata has been followed by several others, and the district is said to be a promising one. As yet little is known concerning the nature of the veins which have been exposed. The formation is reported to be lime and porphyry, and the ore to bear lead and copper, carrying silver. No more definite information has yet been received.

Of the other new mining districts of 1891, Oro Grande, in Southern California, is still the scene of considerable activity; and there seems to be fair probability that some of the prospects there may be developed into mines. The discoveries at Oro Grande have attracted much attention to the mineral resources of Southern California; and there is more exploration work doing among the silver veins of San Bernardino County this year than for a long time past. The region is of considerable promise, and we may look for a gradually increasing product of silver in California as its resources are developed.

The excitement over the Deep Creek region of Utah and Nevada, which was the theme of interest three months ago, has almost entirely faded away. One mine there, the Buckhorn, is, we believe, making regular ore shipments, and others are sending occasional small lots to market; but the discoveries have not been of such a nature and extent as to warrant the immediate construction of a railway into the region; and its inaccessibility, lack of water, and other natural obstacles to profitable mining appear to have discouraged the influx of additional prospectors, or investments of capital in large developments, when there was no longer immediate prospect of a railway.

## NEW PUBLICATIONS.

ANNUAL REPORT OF THE CHIEF OF THE BUREAU OF STEAM ENGINEERING FOR THE YEAR 1890. Plates 49, pages 77. Washington: Government Printing Office.

The report contains only 77 printed pages, mostly of fine type, but the book is 1¼ in. thick, its bulk being taken up by 49 lithographed folding plates of various sizes, illustrating the steam machinery of the vessels of war now building or projected. The drawings in these plates are all made to scale and form a valuable album for those interested in marine engines, boilers, etc. The report proper is brief, but it is full of condensed information concerning the condition of our men-of-war, the results of tests of coil boilers and of steam trials of the new vessels. The report shows internal evidence that the Bureau of Steam Engineering is in good hands, and that in it Chief Engineer Melville is likely to confirm his reputation as a man of resources and energy which he established as leader of the survivors of the ill-fated De Long arctic expedition through the terrors of the Lena Delta. He is a good writer and a severe critic of naval matters which do not suit him. His recommendations for the improvement of the personnel of the navy and of the navy yards are strongly written, and it is to be hoped that members of Congress in whom lies the responsibility of making the navy what it should be, will pay heed to them. We quote a few extracts from the report, which are of public interest.

*League Island Navy Yard.*—'This yard has not been used for general naval purposes for several years, and no work has been done there except such as found necessary for the preservation of machinery in shops and in vessels laid up. It is earnestly recommended to complete the shops at this yard and fully supply them with tools of late design and of power to handle the heaviest marine-engine work.

"Of all places on the Atlantic coast, the Delaware River is the best adapted for iron and steel-ship building, and board after board, appointed to select a place for a naval establishment "for the construction of iron vessels, iron armor, and iron work of every description for naval purposes," has choosen the League Island as the best site. Among its advantages the following are some of those enumerated in the report of the Commission on Naval Yards in 1883.

"The neighborhood abounds in skilled labor in all that pertains to building modern ships of war, and is in the vicinity of unlimited supplies of coal and iron. A fine fresh-water basin for the preservation of iron vessels laid up "in ordinary" may be secured by dredging out the back channel. Dry docks may be constructed there in number sufficient for the prospective demands of the navy. The neighborhood of the iron shipbuilding yards belonging to private parties, and the large machine shops to be found on the Delaware, would enable the Government to avail itself of their services in case of sudden emergency demanding a large amount of extra work.

"'Nowhere else are so many advantages to be found, and there is no no reason why the Government should not avail itself of them.

*Steel Castings.*—"In my report for last year attention was called to the ill success that had attended numerous attempts to use steel for machinery castings, and the experience of the past year has been to still further emphasize all that was then said. Reports have been received of failure after failure to produce sound castings of comparatively simple form and modern weight, and design and patterns have been altered in the hope that better results might be obtained with change of form. In many cases the changes have availed nothing, and after long delays application has been made to use forged steel or cast iron; in others, when the dimensions have been increased to nearly what would be required for the latter metal, sound castings have been obtained. The truth of the matter is that the manufacturers have not kept pace with the demands of the consumers, and unless there is a very great improvement in the making of steel castings, and in a very short time, a return to cast iron will be inevitable, since it is evident that the only reason for using the more expensive material is that the weight of the parts may be decreased in the proportion of its greater strength."

## BOOKS RECEIVED.

**[In sending books for notice, will publishers, for their own sake and that of book buyers, give the retail price?—These notices do not supersede review in another page of the Journal.]**

*A Manual of the Steam Engine.* For engineers and technical schools; advanced courses. Part I., Structure and Theory. By Robert H. Thurston, A. M., LL. D., Dr. Engineering; Director of Sibley College, Cornell University, etc. Illustrated. Pages, 871. Published by John Wiley & Sons, New York, 1891. Price, $7.50.

*Bricks and Brickmaking.* By Alfred Crossley. Illustrated. Pages, 60. Published by *The Brick, Tile and Pottery Gazette*, Ottawa, Ill. Price, 50 cents.

*Mining Rights in Colorado.* Lode and placer claims possessory and patented, from the district organizations to the present time. Statutes in full. Prospecting, land office, incorporations, forms, decisions, etc. By R. S. Morrison and Jacob Fillius, of the Colorado bar. Sixth edition, revised and enlarged. 374 pages. Published by Chain, Hardy & Co., Denver. Price $2.25.

*Tables of Analyses of Clays, etc.* Compiled and arranged by Alfred Crossley. Pages, 35. Published by T. A. Randall & Co., Indianapolis, Ind. Price, $1.

*The Corporation Problem.* The public phases of corporations, their uses, abuses, benefits, dangers, wealth, and power, with a discussion on the social, industrial, economic, and political questions to which they have given rise. By William W. Cook. Pages, 262. Published by G. P. Putnam's Sons, New York, 1891.

*The Electric Motor and its Applications.* By T. C. Martin and Joseph Wetzler. Third edition, with an appendix on the Development of the Electric Motor since 1888, by Dr. Louis Bell, Editor of the *Electrical World*. Illustrated, 315 pages. Published by the W. J. Johnston Company, Ltd., New York. 1891. Price, $3.00.

*The Metal Worker. Essays on House Heating by Steam, Hot Water and Hot Air.* With introduction and tabular comparisons. Arranged for publication by A. O. Kittredge, Editor of *The Metal Worker, Carpentry and Building, etc.* Published by D. Williams, New York, 1891. Price, $2.50.

## CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
All letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents.

### An Antidote to Acid in Boiler Feed Water.

EDITORS ENGINEERING AND MINING JOURNAL:

SIR: I noticed in your issue of July 18th, 1891, an inquiry from Mr. Eames, Gold Hill, N. C., for an antidote to acid in "Boiler Feed Water."

In reply I have much pleasure in supplying such information to him and to others who may have similar difficulty with their "boiler water." Since up to the present time wood has beenused as fuel at Gold Hill, I would advise Mr. Eames to leach the ashes from such fuel and use the wood ashes lye in his boiler feed water. This will decompose the sulphates of iron, copper, and lime (if any) and precipitate the iron and copper as oxides, the sulphuric acid combining with the potash and soda, lime, etc., of such ashes and thus prevent any corrosive action on the boiler. It might be better still to inject the wood ashes after passing through a 40-mesh screen bodily into the boiler; then blow off the latter nightly, to get rid of the mud. H. HUTCHINSON.

LONDON, Eng. July 30, 1891.

### A Mining Congress.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: A Mining Congress as suggested in the columns of your valuable journal would doubtless lead to the further development of great national wealth, so far as the precious and rarer metals are concerned, and would help to bring about profitable results both to the miner and the investor, the two interests being identical and inseparable. What is wanted is *confidence*, which a Mining Congress would help to bring about. Capital, labor, and honest administration, to be beneficial, must go hand in hand and work harmoniously in mining matters as in other industrial pursuits and this is only attainable by confidence being restored, and if currency is to be maintained on the single gold standard, the day may not be far distant when the executive of this country may offer a premium for the production of gold and protect it by an export duty, unless European nations adopt a double standard of currency, for the nations of the earth (excepting the United States of America) cannot hope to redeem their national indebtedness on a one-legged gold basis. The people of this country should never forget the memorable words of that eminent statesman, W. E. Gladstone, who has said *America is a world within itself*, words worthy of re-echo from one end of the American continent to the other. M. GADD.

NEW BRIGHTON, S. I., N. Y., August 26, 1891.

### Steel Cast Projectiles.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: On page 35 of his annual report for the year 1890, the Chief of the Bureau of Steam Engineering of the United States Navy says, of steel castings: "The manufacturers have not kept pace with the demands of the consumers, and unless there is a very great improvement in the making of steel castings, and in a very short time, a return to cast iron will be inevitable."

From a less competent authority, this statement would appear extravagant. As it is, I see no ready way of reconciling it with the known state of activity of the American steel-casting establishments.

Without here attempting to disprove his statement, I cannot refrain from citing a case which reached me at about the same time as the above denunciation of steel castings. It relates to the manufacture of steel-cast projectiles, made by Hadfield, of Sheffield. He writes me: "I was looking over some inspection reports only yesterday, and out of 1,000 10-inch common shells sent "(by us)" in the last few months, we have had six rejected, and these not for any fault in the material, but for damage in transit, which we have to put right. These six will be adjusted and then passed. As each shell has an inspection of about two hours I think the above speaks volumes."

In fact, each shell must be accurate in diameter in its cast and *unturned* condition to $\frac{5}{1000}$ of an inch; that is to say, of two ring-gauges, differing in diameter by only 0·01 in., one must slip over the shell in its unturned state, while the other must stick. Each shell must be accurate in weight, truly balanced, etc. In addition, severe static and ballistic tests are called for.

In an earlier letter Mr. Hadfield wrote as regards common shells, "out of some 7,000 or 8,000 shells supplied we have not had more than 1¼% rejected, and the greater portion of this was for inaccuracies in size, etc., not for defects in material or casting."

At another time he informed me that in the preceding six months there had been but 0·25% of rejections, and less than 2·25% of wasters and experimental pieces collectively; and this though the average weight of the pieces made was only about 40 lbs., the difficulties in making steel castings being inversely as the weight of the piece made.

It is thus clear that the condition of things, at least at one establishment, is quite different from that which Engineer Melville depicts.

HOOSICK FALLS, N. Y., Aug. 27, 1891. HENRY M. HOWE.

### The Free Coinage Discussion.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Your article "The Free Coinage Discussion," published in your issue of August 8th, is the *first revelation to the public* of the true inwardness of the fight for free silver coinage by the representatives of that "rotten borough" known as the State of Nevada.

They have been posing before the people of the United States as the friends of the agricultural class, and pretending to champion their cause, while in fact all their efforts were simply to enrich themselves. Their pretentious patriotism cloaks a greed that stops at nothing. They know that they have enough silver concealed in the Comstock lode to absolutely ruin the people of the United States if the privilege is given them to coin it free. For this they have labored for the last ten years, completing to perfection their methods for robbing these mines and controlling the State of Nevada.

You are right when you call attention to the poverty of the Nevada people. This villainous mill ring has impoverished not only them but the State of Nevada as well, and has crushed it from a position of wealth and population to a position where its own political parties speak of it as "a stench in the nostrils of every honest man."

There never was in the history of the world so complete a conspiracy to rob innocent people as has been originated and put into practice by the mill ring of the State of Nevada. Its conception is a grand one, and if carried to a successful termination will make the greatest group of millionaires that the world ever saw. Its ramifications extend from the Senate of the United States, through its institutions, into its finances, almost into its policy, and into byways that none except the initiated know.

The control of wonderfully rich mines through the nefarious proxy law of the State of California; the looting of those mines through a mill system organized under the laws of the State of Nevada; the hiding of immense deposits of rich silver ore by covering them with water; the political manipulation and control of the State of Nevada by the mill ring to put into the halls of Congress and continue there its members and paid attorneys; the manipulation of the people and the Government of the United States to force it to coin silver free and make a market for the concealed silver; the maintenance of a system of espionage and a reign of terror in the State of Nevada; the subsidizing of a venal press which conceals rather than publishes illegal and dishonest acts—all point to a condition that no other country under the sun would tolerate, and is certainly not complimentary to the "White Slaves of Nevada."

You are doing a noble thing in exposing these people, and may God speed you. J. H. TINGMAN, Secretary Mining Stock Association.

SAN FRANCISCO, August 15, 1891.

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**Volatility of Nickel on Treatment with Hydrochloric Acid.**—A. Schützenberger states that if anhydrous nickel chloride is reduced at a dull heat with dry hydrogen gas it is found that the hydrochloric gas escaping from the reduction tube carries along with it sensible quantities of metal in the form of a volatile product. Special arrangements showed that this is not a case of simple mechanical transportation. The author suggests three hypotheses; the product may be a nickel hydride, which is scarcely probable, or there is formed a nickel hydrochlorate or a hydrochlorate of the chloride, $NiCl_2,+$ (ClH). Iron and zinc are transported in a similar manner.

**A Rapid Annealing Furnace.**—An annealing furnace having a very rapid action is announced as the outcome of the experience of Mr. G. Tomkinson, who for many years has been engaged in the designing and construction of such furnaces, says *Iron*. It is applicable to sheet annealing, hollow ware, malleable iron, sheet iron, or steel. In the case of sheet annealing, the time is said to be reduced by 50 per cent., with other advantages. The furnace consists of four outer walls, within which, by the erection of two side walls and one end wall, is a second furnace or annealing oven. The flames and heated gases from the outer space pass through numerous perforations in the two side walls into the middle chamber, and after traveling through this space escape by bottom flues, furnished with dampers, to the chimney stack. Only one fire is used, and the pot containing the articles to be annealed is by this arrangement subjected to a uniformly distributed heat. Hence the pot does not suffer from undue strains or buckling, and lasts longer than usual. The uniform distribution of the heat also accounts for the shorter time occupied by the annealing, and likewise causes a reduced fuel consumption. We understand that several of these furnaces are in successful use in the Midlands.

**English Coal In Russia.**—The official returns of Russian trade show a great decline in the import of English coal, says the *Iron and Coal Trades Review*. This is due to an increase of the duty in September, 1890, from 6s. to 8s. 4d. a ton and the increased facilities for the carriage of Russian coal. In 1889 the colliery owners of the Bakhmut basin became convinced that their coal, weighted with the heavy railway charges, could not successfully compete with English sea-borne coal, which had its intrinsic superiority to recommend it. They accordingly chartered two steamers for the conveyance of their coal to Odessa, and the following year two more steamers and two large steam barges were engaged in the trade, the whole six of an aggregate tonnage of 4,500. The British Consul General at Odessa says that it is calculated that by this expansion of the carrying trade no less than 124,000 tons were last year conveyed to Odessa. This coal was put on the market at an average price, unscreened, of 24s. 6d. a ton, and all the railway and shipping companies found it to their interest to use it in preference to English coal. Up to 1884 there was no duty on coal, and the imports in that year reached 261,565 tons. A duty of 4s. a ton was then imposed, and by 1886 the imports had fallen to 199,245 tons. At the close of that year the duty was raised to 6s. a ton, with the result that in 1887 the imports fell to 47,899 tons. This rapid decline can only be partially attributed to the increased duty; it was mainly due to a bad harvest setting free harvest laborers for work in the coal mines and putting at the disposal of their owners an abundant supply of railway trucks usually monopolized by the corn trade. The bountiful harvest of 1888 reversed the situation, and that year the imports of English coal reached 195,867 tons. This was exceeded in 1889, when the imports rose to 239,168 tons. The proprietors of the Donetz and Don mines saw that their coal could not compete with the English, as long as it was burdened by the cost of the long land carriage. It cost 6s. to carry a ton of coal from Cardiff to Odessa, a distance of 3,230 miles, while the carriage from Bakhmut, a distance of 650 miles, is 19s. The problem of successful competition with English coal seems to have been solved by the employment of sea transport, aided by the imposition of an additional duty of 40%, and the imports fell last year from 239,168 tons to 138,950. While the Don and Donetz basins supply the bulk of the native coal consumed in South Russia, a certain amount of coal from Poland also finds its way to Odessa. The Polish mines are situated at Granitsa, in the Dombrovo basin, on the Russian and Silesian frontier, and can be delivered at Odessa at 26s. 3d. per ton. It arrives quite free from dust and requires no screening. It is well suited for domestic purposes, and is sold retail at 27s. 6d. to 32s. 3d. per ton, English coal at retail prices being 33s. 7d. for Newcastle and 42s. 7d. for Cardiff.

## NOTES ON ORE SAMPLING AND ITS IMPORTANCE; ALSO ON SAMPLING PLACER MINES.

Written for the Engineering and Mining Journal by A. D. Hodges, Jr.

### I.—THE IMPORTANCE OF CAREFUL SAMPLING.

There are two processes of treating silver ores which have been in use for many years, have often given excellent results, are the only possible methods of treatment under certain circumstances, and are capable of being adapted to a wide range of conditions. Yet our knowledge of them is painfully small; the figures which have been given concerning their results are in the majority of cases unreliable and misleading; costly mistakes in conducting them are being constantly repeated, and, in the case of one process especially, unnecessary failures have been frequent. These processes are amalgamation and lixiviation.

Of the various causes of this condition of affairs I propose now to speak of only one, which has not received the consideration which it deserves.

The extreme importance of thorough and systematic sampling (combined, of course, with accurate assaying) is seldom appreciated in mining and metallurgical operations, except in those cases where the business of mining and that of reduction are carried on by different parties, and there is competition in the purchase of ores. Yet the necessity of sampling is as great when the same company both mines and reduces its ores as when these industries are separated. Unless a company knows with certainty the value of its ores and the actual results of its operations—and it cannot know these without accurate sampling and assaying—it must work blindly. That so many companies have been willing to risk their fortunes by blind work, on account of the expense of sampling, is one of those astonishing facts which crop out from time to time in American metallurgical history, to the bewilderment and confusion of those who have sought to record our metallurgical operations and progress. The expense of thorough sampling and accurate assaying in a well-managed establishment is by no means alarmingly great, and is one which cannot be avoided without danger of disastrous consequences.

The columns of the ENGINEERING AND MINING JOURNAL from time to time have contained descriptions of methods of sampling both by hand and by machinery. There are various methods well known to samplers which all give correct results when properly performed, so that the choice between them may be determined chiefly by local conditions.

In the descriptions of these methods there are certain points whose importance is understood by those in the business, but which have not been always sufficiently emphasized, and on which I would lay especial stress. I refer here more especially to hand sampling, but the underlying principles apply equally well to machine sampling.

### II.—IMPORTANT POINTS IN SAMPLING.

1. The ore should be sampled on a *clean, tight, roomy* floor, preferably of sheet iron.

2. In all ordinary cases (*i. e.*, where the ore is a mixture of coarse and fine) it should be at once broken, so that there is no piece larger than the fist. Of course, if it can be run through a rock crusher and broken finer, so much the better.

3. After this preliminary breaking, the ore should be well mixed and sampled down by some one of the known methods. When the sample is large I usually practice the method of spreading out the material in not too thick a layer, and cutting out two series of channels at right angles with one another, taking the sample from these channels. This is a very common method, although by no means the only good one. In any case, great care should be taken to put with the sample *all the fine material and dust belonging to it*. Thus, in the channel method, all the fine ore in the channels must be carefully swept up and mixed with the coarser material obtained.

4. The larger pieces of ore in the new sample *should again be broken* (unless reduced sufficiently in size in the beginning by a rock crusher), in order to secure equality in size so far as practicable, and the material should be thoroughly mixed and sampled down as before. This process should be repeated, *each time breaking up the larger pieces*, until the sample is reduced to about 500 lbs.

5. The sample now should be crushed so far as necessary to enable it all to be passed through an inch-mesh screen, then mixed and sampled down. This operation should be repeated (*each time with a finer screen* until the final sample is obtained. The mixing and quartering is done preferably on a piece of stout oil cloth when the sample is small enough to be handled in that manner.

6. The final sample should all be passed through a 60-mesh screen. It should then be most thoroughly mixed in a pan, and now can be put in the sample bottles.

I do not lay so much stress upon the particular method of taking a sample at any given period of the process. But I do consider it very important *to reduce the size of the larger pieces at each operation* (unless, as before stated, the rock crusher has in the beginning brought all the material to about the same size), *to use the screen as soon as practicable, and to employ the brush or broom constantly* so as to collect always the proper proportion of dust.

I have never found any difficulty in getting reliable results when sampling has been done carefully on the principles involved above, except when the mineral existed in metallic particles. Even then the use of the screen at once shows the difficulty and indicates the means of overcoming it. The screen and the brush, properly handled, obviate all danger in the case of brittle ores of silver which are often supposed to be particularly difficult to sample.

Machine sampling has its obvious advantages, but cannot compare in reliability with hand sampling if the screen and the brush are neglected.

### III.—WET BATTERY SAMPLES.

It is very often the case that the most convenient method of sampling is to take the sample from the wet battery. Wet-battery samples are proverbially unreliable, but the reason is simply that they have been taken carelessly. The observance of one rule will ensure correct results. This rule, which applies to all mechanical ore-samplers, is to take the sample from the spout, and, instead of splitting or dividing the stream (as is commonly done) to catch or deflect *the entire stream of ore at frequent and regular intervals*. Therefore, in sampling from the wet battery, do not use a small dipper, but use several buckets, never letting the stream splash or run over. Let the material settle in the buckets; then siphon off carefully the clear, supernatant water and dry and mix the residues, sampling them down if the amount is large. If the ore is brittle, so that it all passes through the battery screens, and if these screens are kept in proper condition, battery sampling done as above will be reliable.

### IV.—SAMPLING PLACER MINES.

I stretch this paper a little further to give space for a few remarks on sampling placer deposits. The average Eastern mining investor seems to be of the opinion that a mining engineer can examine a placer claim in a few days, and then can give an accurate report on the amount of gold in the ground, the water supply, etc. This opinion appears extremely flattering to the ability of the engineer until the subject of fees is broached.

As a matter of fact the sampling of a placer claim of any extent is a work demanding usually more time and labor than that of any other class of mines. How often new ground has been thoroughly tested, I leave to others to say. Mr. Aug. J. Bowie, in his work on hydraulic mining in California, when briefly describing the explorations of the North Bloomfield Company before commencing hydraulic operations, states that "they furnish a *remarkable* instance of the extent to which such preliminary work has been done."

A couple of years ago I examined a series of extraordinary placer deposits in Peru, and as I know of no published description of the sampling of such ground, except that mentioned above, I venture to describe the manner in which I tested these deposits.

The natives having worked these claims from prehistoric times by the rude process of booming, the ground was opened to examination to a most unusual extent. There were irregular lines of banks in places more than a mile long and as much as 150 ft. high. Moreover, through accidental breakages of the ditches, the surface above the banks was scored in frequent channels cut by the escaping water often to very considerable depths.

A force of engineers was at work for six or seven months surveying the deposits and the water shed. After this had been done the ground was, for convenience, divided into separate "claims," and each of these claims was resurveyed and sampled.

In testing the deposits, sample-pits were sunk at as nearly regular intervals and as many different depths below the surface as was permitted by the formation of the ground. A very common interval was either 50 meters or 100 meters, according to the total distance to be covered. These pits, placed over the unworked surface and along the banks and the channels from the broken ditches, reached nearly every part of the deposits. Along the high banks the talus of caved material sometimes made the faces accessible almost or quite from top to bottom.

From each sample-pit one-quarter to two cubic yards of gravel were extracted. The entire contents of the pits were taken except the stones too large to be removed, and such-sized stones were too rare in this remarkable deposit to affect the result. The samples were transported to the dump and thrown into boxes, which measured exactly one-half cubic meter. A series of tests, carefully made and frequently repeated, showed that these boxes filled loosely and heaped moderately held each one-half cubic yard of gravel measured *in place*.

The positions of the sample-pits were noted by the surveyors and plotted on the maps.

The sampling was done under my personal supervision. I determined the position of each pit and the amount of material to be taken therefrom. As the pits were carefully placed so as to reach practically all parts of the deposits, and their locations were definitely ascertained by survey; as a measured amount of material was taken from each pit; and as everything encountered was put with the samples, it will be seen that nothing was left to guess-work. We *knew* where each cubic yard of gravel came from and what it held; also that each sample represented the whole material in place, stones and all, from each part of the claims. We were not obliged to *estimate* anything.

The samples were washed in rockers and pans. The gold was collected in the rockers by means of quicksilver. The amalgam was treated with nitric acid; the gold was weighed and finally assayed. Every sample, whether rocked or not, was tested by panning, at least four pans being taken in each case and the pan-contents being measured to insure regularity. All the tests were made with great care by my assistant, Mr. A. J. Chambers, personally. The "colors" were carefully examined and counted, their relative size was noted, and when enough were collected they were weighed. A complete record was kept of the tests, with notes of the character of the dirt, the ease or difficulty with which the gravel was washed, the quality and quantity of the gold and the nature of the residues—the whole forming a respectable-sized book.

The pan-yields and the rocker-returns checked one another, and when discrepancies occurred the sampling and the testing were repeated. Without counting the tests made roughly in the beginning of the examination of the several localities, we had the records of 268 prospect-holes and 293 cubic yards of samples extracted and washed. In addition to the field-work of the surveyors, six months were spent by the mining engineers in examining four of the "claims," with a force of twenty or thirty natives. The examination was not stopped until the examining engineers had fully satisfied themselves of the accuracy of their results. That they were able to carry out their work so thoroughly was due in a great measure to the fact that the financial manager was the late Mr. William H. Cilley, whose extraordinary talent and ability were shown in so many executive positions.

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**Transportation of Metallic Iron and Nickel by Carbon Monoxide.**—Jules Garnier (*Comptes Rendus*, Vol. CXIII., No. 4) gives an instance of the transfer of iron observed in blast furnaces at Vierzon. Another case occurred in refining ferro-nickel on the sole of a Siemens-Martin furnace at Septèmes, where dust of metallic nickel was collected in flues which served to convey the escaping gases to a draught chimney at a considerable distance from the furnaces. In a third case, a mixture of metallic nickel, steel and cast iron, containing about 20% of nickel, covered with a layer of flux, had been melted in a graphite crucible. When the crucible was removed from the furnace and the cover removed, there rose up a sheaf of sparks to the height of 6 m.; two-thirds of the metal were thus lost.

## PROMINENT MEN IN THE MINING INDUSTRY.

### J. R. DeLamar.

Capt. J. R. De Lamar, of Boisé City, Idaho, is one of the most prominent mining men of that new state and may be well selected as a representative of its gold and silver-mining industry. He was not one of the pioneers who went to Idaho in its early territorial days, having gone thither to locate permanently only about five years ago. Since that time, however, he has developed the richest gold and silver mine of Idaho, which is now one of the bonanza mines of this country, and by his energetic and public-spirited efforts has contributed probably more than any other one man in recent years to the advancement of the mining interests of that young and promising state.

Captain De Lamar was born in Amsterdam, Holland, in 1848, but only the first few years of his life were spent in his native land. His bold and vigorous character displayed itself early; for being desirous of seeing the world, he ran away from home at the age of seven years and shipped aboard an East Indian ship as cabin boy, without wages. On the homeward voyage he was promoted and given a salary of four Dutch guilders (about $1.60) per month. His first voyage completed, he continued to follow the sea, gradually working his way up through the various grades of seamanship. His early education in the elementary branches of learning, reading, writing, and arithmetic, were also acquired at sea, the mates of the various ships on which he sailed teaching him, in consideration of his devoting a portion of his watches below in washing their clothes.

By the time that he was 21 years of age Captain De Lamar had visited the four quarters of the globe. At the age of 23 he obtained a captain's diploma, shipped for a voyage as first officer and returned as captain. Submarine work, or diving, being very profitable at this time, so soon after our Civil War, Captain De Lamar concluded to leave the merchant marine service and engage in this business. For several years subsequently he was employed in this manner, raising sunken vessels in the Delaware River, off the New Jersey coast, and at St. Thomas, West Indies. He finally established headquarters at Vineyard Haven, Mass., and continued this line of work along the coast. In 1876 he succeeded in raising a cargo of 1,600 tons of Italian marble from a vessel sunk off the Bermudas many years before, on which three different wrecking parties had worked without success.

Captain De Lamar was generally successful in this business and accumulated considerable money from it. Looking around for an investment for his savings he decided to embark in the African trade, and himself assumed charge of a vessel as master and supercargo. In this venture he again met with substantial financial success, but on account of the African coast fevers, which every year cost him the life of several of his crew, he determined to abandon such a hazardous undertaking, and in 1878 sold his interests.

About this time precious metal mining in the Rocky Mountains was exciting renewed attention in the East from the wonderful bonanzas which were just being uncovered in Leadville. Attracted by the possibilities for the accumulation of great wealth in the mining business Captain De Lamar resolved to quit the sea for good and engage in mining. Upon his arrival in Colorado, however, he immediately realized the necessity of a thorough scientific knowledge of geology and mining for the successful prosecution of the business which he proposed to follow, and, thereupon, went to work to make good this deficiency, to the best of his ability, studying assaying, chemistry, ore dressing and metallurgy. He spent eight years in mining in Colorado, meeting with very fair success. Among the most important of his undertakings was the development of the Terrible lead mine of Custer County. This property he purchased when it was a mere prospect for $3,500. He opened a large body of low-grade lead carbonate ore and finally erected dressing works of 250 tons per day capacity for its concentration This mill, which was at the time the best equipped and by far the largest concentrating works in Colorado, proved very successful. Notwithstanding the low grade of the ore, which averaged in value only about $4.50 per ton, and the high cost of labor and supplies, the Terrible mine was operated at good profit, and was finally sold, in 1886, by Captain De Lamar to the Omaha & Grant Smelting and Refining Company at a good price.

Captain De Lamar spent the next two years in traveling, visiting during this time most of the principal mining camps in the western United States in search of another property to develop. He finally selected a prospect on a mountain, six miles west of Silver City, in Owyhee County, Idaho, where he purchased a group of mining claims for a small amount, and located others around it, so as to cover, practically, the whole mountain, the property secured representing a tract of mineral land about one mile long and three-fourths of a mile wide. Work was commenced by driving a cross-cut tunnel into the mountain, to intersect at right angles the veins which cropped at the surface. This tunnel was designed to extend completely through the mountain, from daylight to daylight, its total length to be 3,800 ft.

The results of the exploration work begun in this great property have proved the wisdom of Captain De Lamar's purchase. Five parallel veins of quartz, carrying gold and silver, 10 ft., 15 ft., 19 ft., 28 ft. and 77 ft. wide, were successively cut by the tunnel, some of which have now been opened for 1,000 ft. on their strike and to a depth of 250 ft. below the surface. Opening the mine cautiously and slowly, Captain De Lamar did not erect a mill for the reduction of its ore until the mine was in the second year of its development, when he purchased two small mills at Silver City and put them at work upon his ore, chiefly for experimental purposes. In the following year, in August, 1890, he erected a 20-stamp pan mill, which has since been in regular operation.

Intersecting the great De Lamar veins are porphyry dikes, and along these are found bodies of extremely rich ore, which is sold to the lead smelters. Car load after car load of this ore shipped to Denver during the past two years has assayed from $1,500 to $2,000. The great bodies of ore, free milling in character, in the mine are of lower grade, however, but still unusually rich, averaging last year $18.17 per ton in gold and $13.19 in silver.

J. R. DE LAMAR.

Last spring Captain De Lamar sold the De Lamar mine to an English company, the De Lamar Mining Company, Limited, for $2,000,000 cash, but subsequently, desiring to retain an interest in the great property which he had developed, he obtained by mutual consent one-half of the capital stock of the company and became its resident director. In July the company paid its first dividend, amounting to $72,000, for the three months ending June 30th, this having been earned with the 20-stamp mill. A new 80-stamp mill is now in course of erection, and upon the completion of this the De Lamar will undoubtedly largely increase its dividends. Prior to the organization of the company Captain De Lamar had taken from the mine, in round numbers, $1,500,000, and had spent about $500,000 in improvements at the mine and the village, named De Lamar by petition of his men, which had sprung up about it.

Captain De Lamar is not at present actively engaged in mining operations, the management of the De Lamar mine having been intrusted to Capt. John W. Plummer, formerly of the Granite Mountain and Elkhorn companies, but is devoting himself to the advancement of the interests of Idaho through the World's Fair at Chicago, to which he was appointed sole Commissioner for Idaho, by Gov. Willey. With his usual public spirit he has determined that this work shall not fail for lack of funds and has offered to duplicate the subscriptions which the citizens of Idaho may make for that purpose, even if takes $100,000 out of his own pocket. Besides the De Lamar Mining Company, Captain De Lamar is interested in various other enterprises in Idaho, including the Idaho N. & S. R. R., now in course of construction, the Boisé City Hot & Cold Water Company, and a savings bank at Boisé City. He is a member of the State Senate, in which he is serving his first term, but probably not his last, as he may be truly called one of the most popular men in Idaho. Especially is this so among his miners and employees at De Lamar, who appreciate the care which he has always given to their interests.

## THE LOOT OF THE COMSTOCK MINES.

The following is an extract from an article entitled "The Loot of the Comstock Mines," in the July issue of the *Criterion*, of San Francisco, Cal.:

As heretofore indicated, the assay value of the ore as extracted from the various (Comstock) mines is unknown to the stockholders. The superintendent at the mine, the dummy trustees and the mill owners are the only ones who know that secret.

Investigations have revealed the fact, which is capable of demonstration, that in many instances the ores extracted have been of great value and produced very considerable amounts of bullion, which, instead of going to the credit of the companies furnishing the ore, mysteriously disappeared. Where did it go to? Well, there are very many people who would like an absolutely straightforward answer to that question; meantime stockholders are unkind enough, in view of the many suspicious circumstances, to assert that this bullion is diverted for the benefit of the mill owners and their satellites. It is apparent at a glance that if the precious metals were being shipped from the mills in large quantities, suspicions would be confirmed, and an exposé result. Such an untoward happening is avoided, however, by means of the Bullion and Exchange Bank, which for convenience is situated at Carson City. The reputed principal owner of this bank is Mr. Evan Williams, who is also manager and superintendent of the Comstock Mill and Mining Company, of which Senator J. P. Jones is president. By a curious coincidence, too, the cashier of the Bullion and Exchange Bank is chief clerk of the United States Mint, at Carson City.

About fifty per cent. of the bullion deposits in the United States Mint at Carson are made by the clerk and reputed owner of the Bullion and Exchange Bank. Where does this bullion come from? Nay, more suggestive still, a by no means inconsiderable portion of the deposits of gold bullion made in the United States Mint at Carson has been made by the superintendent of the Carson Mint. As Nevada is not a gold-bullion-producing country, it is interesting to know where the superintendent of the mint got this bullion.

Briefly, then, mining on the Comstock is carried on, if the facts heretofore set forth are correct, as follows. Trustees, elected by proxies, assess stockholders to obtain funds to work the mine, turn the ore over to the mill-owners for treatment, and the bullion product is forwarded by the mill ring through the Bullion and Exchange Bank to the United States Mint at Carson. By the co-operation of the representative in the United States Mint, the bullion is turned into coin, and finds final lodgment in the pockets of the several parties to the proceeding.

These facts are not new. Every one interested in Comstock mining knows of them, but what is "everybody's business is nobody's business," and these nefarious methods have continued without interference and with little complaint. In the event, however, of trouble arising between stockholders and the mill companies—the latter being incorporated in Nevada, which has about 10,000 or 12,000 voters—a conflict of jurisdiction between the State of California and the State of Nevada is presumed to throw any action to recover into the Nevada courts. This very point of jurisdiction was raised during the past month, when, in the suit instituted against the Savage Mining Company by M. W. Fox, counsel argued most earnestly that California incorporations could not control corporate property situated in another State.

That the mode of operating the Comstock mines, as herein set forth, is accurately outlined is not open to doubt, for it has never been contradicted; those most closely concerned in the matter have preferred a long bank account and a besmirched character to small gains and a reputation for unimpeachable integrity. In a recent issue of the ENGINEERING AND MINING JOURNAL, which is the leading authority in the United States on the mining industry, the following editorial comment appeared anent the taking of depositions in this city in the Hale & Norcross suit: "The evidence already secured by an examination of Senator John P. Jones, the head of the Comstock ring, by that of Evan Williams, the superintendent of the mills, who is also a State Senator, and the chief owner of the Bullion and Exchange Bank, through which the bullion is transferred from the mines to the United States Mint, and loses its identity after paying a heavy tax to the bank has thrown much light on the nefarious proceedings of the ring, and there is much more evidence to come. . . . The 'white slaves of Virginia City,' as the miners who are practically owned by the mill ring have been called, will have good reason to rejoice when this band of thieves is broken up, and the mines and mills are worked honestly."

Strong language this, but no objection has been taken to it; and when it is remembered that in law not unfrequently the "greater the truth the greater the libel," it will be readily understood that the monetary inducements held out must be large when men are prepared to stand quietly by and permit their good name and fame to be attacked without protest—all of which goes to prove that the mining industry, on the Comstock at least, is being peculiarly managed, and the business methods in vogue directly opposed to legitimate enterprises in which millions of money are involved.

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**Antimony in Portugal.**—Beds of antimony are found in all parts of Portugal; but the richest deposits are encountered in the north, those at Braganza being the most productive, says *Iron*. There are also some profitable mines in the neighborhood of Oporto. To the north of the Douro are immense veins of antimony and lead ore, in addition to zinc and wolfram ore, the district also abounding in brown coal. The antimony ore worked in this part of the country is generally rich in gold and silver. A German mining engineer, Herr Harties, was the first to demonstrate the importance of the Portuguese antimony mines. This was in the year 1807. Twenty-six years later the exploitation of the deposits was taken up by Baron von Eschwege, and continued for a long period with the aid of native and English capital. In point of extent, the Coimbra mines rank second in Portugal; but owing to the high transport charges and other unfavorable conditions, they are not extensively worked. In the south or southeast, in the province of Alemtejo, there are also large beds of antimony ore, which were successfully exploited for the first time about the year 1865. At very few of the mines is the ore reduced, nearly all, after being separated into first, second and third qualities, being sold to England.

## RIVER MINING IN CALIFORNIA.

Written for the Engineering and Mining Journal by S. S. Boynton.

The history of river mining in California is a record of gigantic struggles on the part of man to cope with the all-powerful forces of nature. The richest mines in this State were the rocky beds of creeks and rivers in the Sierra Nevada Mountains. As a rule the larger the stream the greater the amount of gold it contained. Enormous sums were taken from the beds of the American, Yuba and Feather rivers. The last named is a wild and turbulent river that cuts the Sierras in twain and drains some 4,600 square miles of auriferous country, and is the richest gold-bearing channel known in mining history. Fed by mountain snow banks these rivers do not materially lessen in volume till June, and it is July before a dam can be placed in them, while by the 1st of November they are again swelling in volume and power, so that river mining is almost entirely a problem of restraining and handling large volumes of water.

To successfully mine the bed of a river, it is necessary to erect a head dam that will withstand the force of water in the stream; to build a flume that will carry the whole volume of water in the river; to put in a foot-dam and sub-flume; to erect cranes or derricks that will lift the enormous bowlders often found in the beds to be worked, and construct powerful wheels to run the immense pumps needed to drain the river. Sluices, derricks, hand-pumps and all mining material have to be provided and put in place.

All this has to be accomplished within the brief time named, and the whole mining operations concluded before the 1st of November, so that in many instances the work of cleaning and stripping the river beds is done in the most hurried and imperfect manner. The cost of lumber, tools and labor was extremely high, yet so rich were many of the river beds, that during the first ten years of mining in California, the river channels had been more nearly exhausted than any other class of mines in the State. Those that remain are in the most inaccessible localities, or in streams that the early miners found impracticable to lay dry on account of the difficulties presented, or from lack of capital, as it was necessary to push their operations through in a single season, and they had no capital to carry them over during a second. For these and other reasons the pioneer miners found themselves unable to successfully work that portion of Feather River lying in a deep rocky cañon a short distance above Oroville.

Above and below this point the river had yielded large amounts of gold, and there was consequently reason for the belief that this section also was rich; the difficulties attached to the recovery of its wealth were considered almost insurmountable. Some time ago, however, Major Frank McLaughlin, a well-known mining man of California, having consolidated the various interests covering this section of the river, succeeded in organizing, in London, the Golden Gate Alluvial Syndicate, Limited, with ample capital to exploit the property.

The plan of the works constructed by this company at the Golden Gate is as follows. The water was diverted by means of a dam into a flume, blasted out of the rocky precipitous north bank of the river. The excavation for this flume averaged some 30 ft. in width and over 3,200 ft. in length, and was in itself a great undertaking. The dam raised the river to a height of 50 ft., at which height it flowed into and through the flume, returning to its old bed at the terminus of the flume below the foot dam.

The dam was made of cribs 10 ft. to 15 ft. square, the dimensions being at the bottom 90 ft. across the stream, 60 ft. wide and 250 long by 40 ft. wide on top; the height of the main dam being 40 ft. and the false work on top 12 ft. The cribs were made of peeled pine poles 10 ins. to 12 ins. diameter at the butt and 20 ft. to 40 ft. long. They were cut in the mountains above the dam and rafted down the river. These cribs were spiked together with wrought-iron spikes. The water slope of the cribs, 1 ft. horizontal to 4 ft. vertical, was double planked with 2 in. boards. The dam was only made tight enough to raise the floating poles within convenient reach for construction as they were needed, the water being allowed to run through the structure until it was completed. The cribs were filled with rock, quarried above the banks of the river and brought to the dam by temporary tramways. On these cribs were built the upper 12 ft. of the dam of 8 × 8 timber frames, such as have been described, and through it was a waste-gate 10 ft. × 40 ft. This gate was intended to let that portion of the first fall rise in the river, usually coming in October, through the claim, should the flume fail to carry it. The dam when completed was made tight by sluicing in gravel, sand and earth on the up-stream face of the boarded water slope. The construction of this dam required 70,000 linear feet of poles and 20,000 tons of rock and gravel.

The sub-flume in the bed of the river was constructed during the building of the dam. The object of the sub-flume is to carry off the seepage, if any, through the dam and flume, but mainly to carry off the dead water left between the head and foot dams, which is pumped into it. It was built 4 ft. wide at the upper end, gradually widening to from 6 ft. to 8 ft., with an average depth of 3 ft. and a grade of ¼ in. in 16 ft. The water was raised 30 ft. to 40 ft. into the sub-flume by a series of Chinese pumps, operated by large under-shot wheels which were built in the main flume, their propelling power being the flow of the river through the flume.

The main flume was 70 ft. wide, tapering in 800 ft. to the regular width of 38 ft. The sides were built 5 ft. high, and it was given a grade of 1 in. to 16 ft. In construction five stringers of 8 × 8 spruce timber were laid, and on these cross ties of 6 × 6 timber, 4 ft. apart. Where there was not sufficient rock bearing, the cross ties, as well as the stringers, were posted up. For uprights 4 × 6 timbers were used, braced by 4 × 4 scantling from the ends of the cross ties. The bottom and sides were planked with 1¼-in. boards. The depth of flow at extreme low water was 2½ ft. and its velocity 18 ft. per second, indicating a flow of 1,440 cu. ft. per second, or 72,000 ins. under a 4-in. head.

Though every effort was made, the mine could not be drained sufficiently to strip the débris so as to permit of sluicing ere the unparalleled early rains of last year set in. The great floods consequent upon these rains raised the river to such a height that despite the partial opening of the waste-gates, the main flume was filled to overflowing, so that the mine was filled with water, thus undoing the whole season's work.

Upon the first cessation of the rains, booms were built across the river

below the claim and the lumber of the sub-flume thereby collected. Gangs of men were set to work taking down the main flume, the lumber of which, with that of the sub-flume was all stacked above extraordinary high water mark in such shape as to be ready for assembling when work could be resumed this season.

Before the opening of the waste-gates, the Chinese pumps and sub-flume were made fast by cables to the banks at such points as afforded facilities for so doing, and the claim stripped of all mining material. In fact, the total damage of the winter storms did not exceed a few hundred dollars.

Attention was then directed to the head dam, the south wing of which was blown out to relieve it as much as possible of the winter floods. A massive deck of 4 × 12 planking was spiked to 10 × 10 timbers, which were bolted into the main dam, and every precaution taken to strengthen the dam so that it would stand the winter floods. This was something hitherto unknown in river mining in California, the dams heretofore built for that purpose having been invariably swept out during the winter, but the Golden Gate dam passed unharmed throughout the mighty winter torrents which at times poured over its entire crest, 6 ft. in height from bank to bank.

As soon as possible work was resumed this season. The main flume was re-laid and strengthened by additional stringers (making a total of seven) and cross ties, and arrangements made to drain the claim by means of two centrifugal pumps, which are operated by under-shot wheels in the main flume, the small seepage through the head dam being taken up by Chinese pumps at the head of the sub-flume. The rebuilding of the blown out wing of the dam in the face of the vast torrents of water flowing through the open space was a herculean task, but was most successfully accomplished. Such progress has been made on the balance of the work that by the latter part of this month sluicing will be well under way.

Last May Major McLaughlin effected a sale of a piece of river mining property below the Golden Gate to an English corporation, of which he was appointed general manager, the Golden Feather Channel, Limited. For the mining of this strip of river, over 10,000 ft. in length, he planned one of the most gigantic enterprises that have ever been undertaken in river mining on the Pacific coast. This was to build a permanent dam in the Feather River, and by it to divert the entire river into and through a great canal, formed partly by the excavation of a deep cut through the rocky west bank and partly by a massive rock and cement wall, by means of which the river could be carried past its former bed and thus allow of the mining of the bedrock gravels uncovered by the draining of the river for a number of seasons without danger of loss or wreckage through the winter floods. The feasibility of these plans was reported upon, at the request of the English company, by Mr. William Ham. Hall, ex-State Engineer, and pronounced perfect after thorough investigation. The working plans were prepared and executed by Mr. Warren G. Sanborn, chief engineer and superintendent of the company, who has been identified with the project from its start.

Mr. George F. Geisse is resident secretary of both companies. Work was commenced upon the works of the Golden Feather about July, 1890, telephone lines constructed, camps erected for the large force of employés, roads, bridges, cement sheds, lumber yards, powder houses, blacksmith shops and other accommodations provided. From that time until now an army of men have been employed in grading the great canal, building the massive wall, laying the foundations of the head dam and building the foot dam and sub-flume. This sub-flume is over 6,000 ft. in length and averages 10 ft. in width; about 320,000 ft. of lumber were used in its construction, in addition to the extensive posting. The canal extends for a distance of a mile from the lower end of a temporary flume, 950 ft. in length, being an extension of the Golden Gate flume by which the river is carried into the canal. The average width of the canal is 50 ft., depth 11 ft, and grade 1½ ft. in 1,000 ft. In its construction there were excavated 60,000 cu. yds. of rock and earth, while 10,000 cu. yds. of rock and concrete wall were built.

The draining and pumping of the claim will be accomplished by means of hydraulic elevators which will be operated by 1,000 in. of water from the Miocene ditch, conveyed from the reservoir at the terminus of that ditch to the claim through a pipe line. The water, under the head obtained, provides 1,200 h. p. for draining and working the mine.

On July 27th the water was turned from the Feather River into this great canal, where it is flowing at the present time. As soon as the mine can be thoroughly pumped dry it is the intention to complete the permanent head dam, the foundations being already in place. This dam will be pushed ahead with all possible despatch. It will extend from a great rock point at the foot of South Table Mountain to a high mass of rock in the center of the stream and thence to the opposite bank. The solid part of the dam will be 130 ft. long and 23 ft. wide on top. Its height will be 47 ft. with a shutter dam of 10 ft. additional. This shutter dam will fall down on the main dam during the winter floods. Added to the main dam will be a wing dam, diagonal, about 80 ft. long and 11 ft. high. A pier of masonry is provided for at the junction point of the two parts of the dam, and an abutment of similar construction at each end of the dam. The 80 ft. wing dam will be removed during or previous to the winter floods to provide additional outlet for them. In building this great dam 500,000 ft. of timber will be used. This timber has been prepared and is now on the ground ready to be placed in the river. About 2,500 cu. yds. of gravel and about 6,000 yds. of rock will be used in filling the bays of the great dam. An ingenious system of head gates has been devised by Mr. Sanborn at the head of the canal to protect it from the ravages of winter floods.

CANAL AND SUB-FLUME; LOOKING DOWN RIVER.

The richness of the mines in the vicinity of Oroville has been marvelous. The Spring Valley mine at Cherokee is known to have returned $2,650,800 in 10 years. It has been estimated that $24,000,000 a year was taken from the mines near Oroville during a period of nearly five years, when extensive placer and drift mining operations were in progress. Mining, however, continued in this locality long after the boom passed away, and an immense quantity of gold was extracted. Then came a sudden rush to what were known as the Lava Bed mines, extending two or three miles below the town of Oroville, and the estimated output of these mines foots up to $45,000,000, making, at the lowest calculation, $165,000,000 for the gold taken from mines in the neighborhood of where the Golden Gate and Golden Feather mines are situated.

The river mines are prolific in gold, and from the Cape claim no less than $680,000 was paid in dividends, the cost to open and work the mine being $176,985; 250 men were employed from May to November, but the actual number of working days in the bed of the river was only 42. In 1858, when the Union Cape claim was worked, the expense of building the dam, putting in the flume, pumps, derricks, sub-flume, and foot dam was $160,000, and though the rains came so early that only a few days' mining was obtained, it is known that $250,000 was taken from the mine.

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**Aluminum Used in Bicycles.**—The employment of aluminum in the manufacture of bicycles has been experimented upon for some time past by a well-known manufacturer in Paris, says the *Ironmonger*. In order to make aluminum at all applicable to the new purpose it is found necessary to alloy the metal with copper. In its pure state it can only be used for mud guards and cranks, where the extreme lightness of aluminum gives a distinct advantage over steel.

## HOWE'S METALLURGY OF STEEL.

The *Bulletin de la Société d'encouragement pour l'industrie nationale*, (July 1891) contains the following report of M. S. Jordan of the Committee of the Chemical Arts on the awarding of the prize of 2,500 francs for a published work useful to the chemical or metallurgical industry.

Gentlemen: An American technical journal of an extremely large circulation on the other side of the Atlantic, the ENGINEERING AND MINING JOURNAL, published by installments, from March, 1887, to the end of 1889, an important work on the Metallurgy of Steel by Mr. Henry Marion Howe, S. B., A. M., lecturer on metallurgy at the Massachusetts Institute of Technology, Boston, Mass., together with the author's standing invitation to his readers to call his attention to whatever incorrectness or error might occur in the text.

Since its first appearance, Mr. Howe's work has commanded the close attention of experts in every country, owing to his conscientious criticism, wide scholarship and thorough training in science as well as its industrial applications. It was evident that he was theoretically versed in metallurgical chemistry and mechanics, able to avail himself of the resources of the laboratory and experimental research to the benefit of his explanations and verifications of current statements and theories, a linguist familiar with the special literature of the chief metallurgical countries of Europe, profoundly learned and endowed with an almost incredible capacity for work; but besides he proved himself a practical man, an observer of details in shop and works, appreciating their significance and posted up to date concerning technical improvements.

Mr. Howe, who was a member of the prize jury at the international exposition in Paris, in 1889, became acquainted with many European metallurgists on that occasion and on his subsequent visit, extending over several months, to the most important iron works in Europe.

On his return to America Mr. Howe published the "Metallurgy of Steel," this time in a great quarto volume, magnificently gotten up by the Scientific Publishing Company, of New York, resplendent with a rarely equaled array of most tasty tables and illustrations. The success of this book was so great that neither its previous appearance in periodical form nor its relatively high price ($10) prevented the entire edition from being disposed of almost immediately; in fact, a good many had to wait for the second edition.

It is not an easy task to give, in a limited space, a summary of the contents of a work that comprises nearly 400 quarto pages and 250 tables of analyses and experiments besides about 200 illustrations, of which, as of the tables, the greater number had not hitherto been published, many of them being the result of the author's personal investigations and calculations. Nevertheless, I shall try.

Despite the title "Metallurgy of Steel," fourteen out of the eighteen chapters of the book are devoted to the metallurgical chemistry of iron and to the study of the molecular phenomena from the physical as well as mechanical standpoint. It is difficult without a perusal of the book to form an idea of the quantity of facts condensed and summarized in these fourteen chapters, with running comments of conscientious criticism.

The author first reviews the principal features of all modern works on the various states of iron and carbon, the constitution of steel, tempering, hardening, annealing and the influence, on the metal's mechanical properties, of its different carbon contents (with diagrams whose tabulated presentation of great numbers of facts and observations enables the author to deduce empirical formulæ of interest). Then the author studies the alloys of iron and the several elements of value in the industry, silicon, manganese (Mr. Hadfield's recent investigations on manganese steel included), sulphur, phosphorus, chromium, tungsten, copper, nickel and the various metals that occasionally occur in small quantities in iron, from zinc, tin, lead, etc., to the precious metals and even the alkaline earths, no detail escaping his attention. The author subsequently treats of the action, on iron in its different states, of oxygen, nitrogen, hydrogen and carbonic oxide; discusses the general phenomena of absorption and escape of gas from iron, and then gives the precautions against the occurrence of blowholes and pipes.

The two chapters, "Structure and Related Subjects" and "Cold Working; Hot Working; Welding," give a résumé of what has so far been ascertained by microscopic and chemical study concerning fracture, changes of crystallization, thermal phenomena during heating and cooling, influence of shock and vibration, overheating, wire drawing, cold rolling, punching and shearing, hammering and, finally, welding.

These fourteen chapters by themselves make a complete treatise on the metallurgical chemistry, physics and molecular mechanics of iron, thus realizing, so far as this metal is concerned, such a desideratum as is expressed by our society's programme.

The chapter that follows treats of the various direct processes, from the old Catalan forge and the American bloomary to Siemens' rotator, Husgafvel's high bloomary and other still more recent processes—all with more details than any other work yet published.

In the next chapter, "Charcoal-Hearth Processes," Mr. Howe explains, discusses and exemplifies the processes under this category still used, as the Lancashire, the Dannemora, the South Wales and the Franche-Comté process. Another chapter, devoted to the crucible process, describes and discusses in a novel manner the crucible steel process proper as well as the Mitis process.

After the description, in the three last mentioned chapters, of processes whose industrial importance has greatly diminished, the author devotes to the study of the different apparatus necessary for the Bessemer process the last chapter, in which is gathered an abundance of technical and graphical information that has never before found its way into print. The constant critical comment here, as everywhere else, bears witness of a profound mastery of this subject.

An appendix deals with some new products or processes, such as the special steels, manganese-steel, chrome-steel, nickel-steel, etc., anti-rust coatings and lead-quenching.

It will be noticed that Mr. Howe has omitted the discussion of the theoretical and chemical problems involved in the acid and basic Bessemer process, probably reserving them for a supplement or second volume, for which he has undoubtedly collected numerous data in Europe. Surely, the publication of this supplement will be awaited impatiently by all who have had the good fortune to appreciate the value of the volume under discussion.

The literary style of this work is vivacious and clear, now and then heightened by a touch of humor. One might find that the author occasionally allows his frankness to be a trifle too cutting, and even crushing in the estimation of certain more or less new theories or inventions; but his increasing and conscientious search for the truth and the spirit of independence characteristic of Americans, make one readily close the eyes to such blemish, if blemish it be.

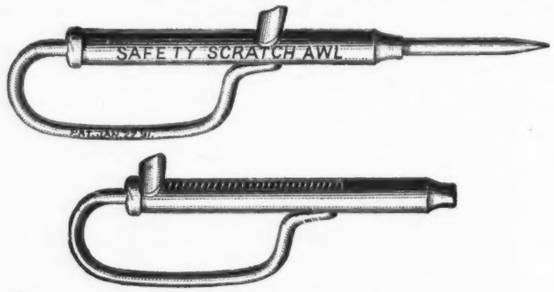
The "Metallurgy of Steel" occupies now in the library of iron metallurgical books a foremost place alongside the monumental works of Bell, Grüner, Percy and Karsten. Although the English language, in which it is written, is well enough known in our great French works to enable these to profit by Mr. Howe's treatise, I must express the desire, though well conscious of the obstacles besetting its realization, that a competent translator will soon bring this work within reach of all our countrymen.

Gentlemen, the Committee of the Chemical Arts submits to you the proposal of thanking Mr. Henry Marion Howe for sending you his very remarkable work, and of voting for the publication of the present report in the *Bulletin*.

S. JORDAN.

## A SAFETY SCRATCH AWL.

A safety scratch awl is among the novelties recently placed upon the market by the Patent Development Company, of New York. The tool may be also used as a scriber for iron workers. Its particular features are as



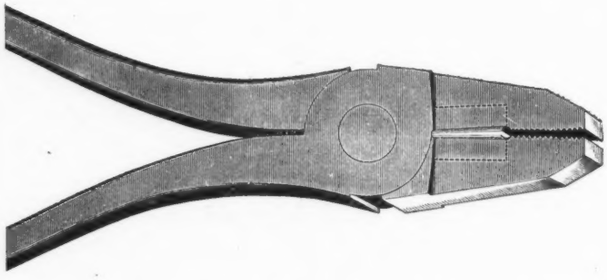

follows. An awl is provided that may be carried in the pocket without danger, as the point, when not held out for use, is within the case, as shown in the accompanying cut, and is protected thereby. The guard on awl makes it possible to retain same in hand while working with other tools. The tool is nickel-plated and of attractive appearance.

## THE CORBIN SELF-LOCKING SPRING SHACKLE PADLOCK.

A new padlock, recently placed upon the market, merits attention. It is made of heavy bronze gun metal, and has a spring shackle; is self locking and when locked is comparatively weather proof, as the shackle shuts in the case tightly. The most conspicuous feature of the new lock is its six levers, thus as far as possible making it burglar proof. The key operates the lock by a straight pressure on tumblers, the keyhole being on the under side of the case. It is circular in form, and having no corners its liability to be easily opened is greatly lessened. The number of tumblers admit of any number of locks being made, each one with a different key, thereby making them particularly suitable for uses in clubs, armories or other places where locks are required, having keys unlike any others used in the building.

## AMERICAN ALL-STEEL SIDE-CUTTING PLYERS.

Wiebusch & Hilger, of New York, are introducing a new side-cutting all-steel plyer, which is shown in the accompanying illustration. The plyers are of solid steel, drop forged, with jaws and cutters in one piece;



the cutter being close to the joint, a very powerful leverage is obtained. The opening opposite the jaws is made very large, to freely admit large-sized wire, or wire heavily insulated as used in electrical work. The plyers are made in sizes from 4 to 8 inches.

**Coal Mining in India.**—The Indian collieries are in a prosperous condition, according to *Engineering*. At Warora the output in 1890 was 142,000 tons, an increase of 27,000 tons. The Umaria mine supplied 30,000 tons to the Great Indian Peninsula and Midland Railways respectively, and nearly 5,000 tons to the Bengal-Nagpur line. The Singareni field is being steadily developed. In 1887 only 3,000 tons were raised, and last year the output was over 125,000 tons. The Dandot and Khost collieries are doing fairly well. From Molpani the reports are discouraging. Coal has been found near the Eeb River in the Sambulpur district. The seam is 16 ft. thick, and it is estimated contains 8,000,000 tons fit for locomotive use.

## OFFICIAL REPORTS.

### Bull-Domingo Mining and Leasing Company.

The annual meeting of the stockholders of the Bull-Domingo Mining and Leasing Company was held July 15th, 1891, at the office of the company, Room 419, Boston Block, Denver, Colo. Messrs. E. C. Gilman, S. Z. Dickson, Samuel P. Rose, H. H. Tomkins and S. H. Tomkins were chosen directors for the ensuing year. The newly elected Board of Directors met immediately after the adjournment of the stockholders and elected the following officers: President, E. C. Gilman; vice-president, S. H. Tomkins; treasurer, H. H. Tomkins & Co.; secretary and manager, S. Z. Dickson.

The report of manager for the year ending July 15th, 1891, was as follows: The Bull-Domingo Mining and Leasing Company was incorporated under the laws of the State of Colorado, in 100,000 shares at $2.50 per share. It purchased from the Phœnix Lead Company, of New York, all personal property of said latter company, including a shafthouse and equipment erected in 1886, at a cost of $35,000, together with manager's residence, office, boarding house, etc.; also mill on Grape Creek, 2½ miles distant from the mine, having a capacity of 150 tons daily, erected and remodeled at a cost of $63,000. It also had a lease for 30 years on the Phœnix Lead Company's property (formerly known and referred to as the Bull-Domingo Mining Company) at a royalty of 7% net smelting returns.

The mine is open to the depth of 750 ft., present stoping being done between 550 and 650 levels. A drift has been driven from the bottom of the winze (750-ft. level), and has disclosed the ore body in full strength and value, as found above. The management will begin at once with the sinking of the main shaft to a depth of 800 ft., and make connections with the ore body. This will occupy about four months' time, and will not materially add to the present current expenses When this work is completed, there should be at least one year's stoping ground explored.

The following, taken from the report of the Superintendent of the United States Mint, for the year 1882, pages 437 and 438, gives a brief synopsis of the early history of the mine:

"The 'Bull-Domingo' is situated about 5 miles from the 'Bassick' and is similar in formation, except that the mineral carries silver only. This property, in its exterior, is exceedingly attractive, and, for territory, includes two original locations, the 'Domingo' and the 'Johnny Bull.'

"The company owns, in addition, three other claims not on this vein. It reports an expenditure of over $391,000 for improvements and operating the mine, and, while it has not explored any part of the property beyond the space of 90 ft., near the middle of the mine, it admits that from one hole in that part it has received in money about $272,000.

"The mine is located in the southwestern edge of a small group called the 'Blue Mountains,' at the entrance of a little gulch or ravine, and lies mostly on the south side of the first hill of the group and extends south across the ravine. The direction of the claim, as located and patented, is about N. 18° W., while the vein is found, so far as explored with certainty, and from certain other indications, to bear 7° or 8° further to the west.

"A great red dike of porphyritic granite lies across the line of the vein and claim in a course about N. 5° E. This dike is about 30 ft. wide and in strong contrast with the blue or black granite of the mountain side. The appearances indicate that the dike is broken and the vein continues at the intersection, no indication of the dike being apparent on the surface for the space of 200 ft. except at this point, which is some 600 ft. from the north end of the 'Domingo' claim. The vein dips to the eastward at an angle of about 30°, and all the mineral yet found is along the hanging wall. The vein remains wholly unexplored in all parts north of the dike intersection, and for the space of fully 700 ft. from the lower end, not more than 100 or 150 ft. of the vein being explored even so far as to know of the course or location of the walls.

"That the exploration of the 'Domingo' by a drift along the hanging wall will reveal the location of large bodies of ore especially in close proximity to the dike, may be expected; but whether the same will be found in parts of the vein remote from the dike in such large quantities and value cannot be predicted, as a dike, while containing no mineral generally, seems to increase the quantity and richness of the mineral on each and for considerable distances, the reason for which is yet a question for science to settle. That the 'Domingo' is not a chimney or irregularly wide crevice at this place as the result of nearness to the dike, is clear enough, as the vein was formed since the dike and broke through it precisely as through the adjoining rocks."

The statement of the treasurer of the company of receipts and expenditures, from July 15th, 1890, to July 15th, 1891, was as follows: Pounds of ore extracted, 2,713,363; total amount received from smelters, $112,883.23; average per ton, $82,45; mining property, $461.12; H. H. Tomkins, treasurer, $524.68; total receipts, $113,869.03.

Expenses were as follows: General expenses, $3,425.35; mine expense, $2,669.40; mill expense, $1.526.30; coal at mill, $3,154.27; mine labor, $33,288.93; mill labor, $6,570.00; ore hauling, $2,799 33; Denver office, $1,020.60; hardware account, $4,318.93; dividends, $40,999.92; fuel and timber at mine, $6,315.98; royalty, $7,780.02; total, $113,869.03.

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**Explosions of Firedamp in Prussian Collieries in 1890.**—According to official statistics concerning the coal mines of Prussia during 1890, 116 accidents occurred in consequence of the ignition of coal gas, and of these 32 were fatal and 84 non-fatal. As compared with 1889, the number of explosions with fatal results in 1890 increased by 6, and was greater than in any one of the previous five years. The number of persons killed also showed an increase over the years 1888 and 1889, but was more favorable than the average of the years from 1881 to 1890. On an average 2·44 deaths were caused by each fatal explosion; this compares with 2·62 in 1889, 3·74 in 1888, and 4·89 deaths in 1887. Moreover, the 32 mortal accidents also caused severe injuries to 8 and light wounds to 17 miners. The injuries in 69 of the non-fatal accidents were light, in 8 they were very serious, and in the remaining 7 cases they were both light and serious. Explosions took place in 79 steam coal pits out of the total of 354 operated in Prussia last year.

## THE McCLAVE GRATES.

The subject of coal consumption is a vital question that always interests the manufacturer, and a constant effort is at all times tending toward a means whereby the fuel bill may be reduced. This fact has been the direct cause of many improvements during late years in the matter of steam production, and any application of mechanics that is successful in this line is eagerly sought after. We show in the accompanying engravings a new grate designed to economize in this direction, which is now being introduced by James Beggs & Co., of New York. Its operation is as follows.

The grate as shown in Fig. 1 is in position and ready for use. The bars are pivoted at each end and have two motions, as shown in Figs. 2 and 3. The shaking motion is imparted by means of the lever, which connects with each grate by a rod, extending under the grate bars; by

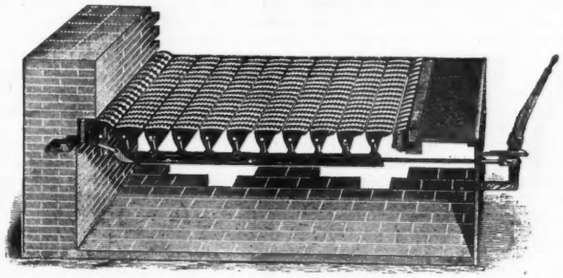

FIG. 1.

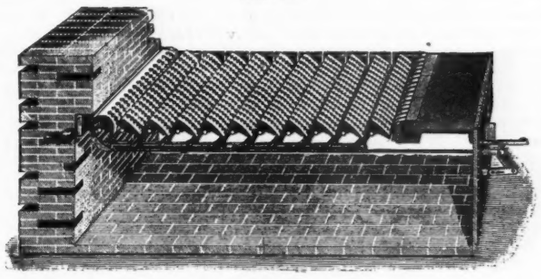

FIG. 2.

FIG. 3.

movement of this lever backward and forward the grate takes the position shown in Figs. 2 and 3. By a rapid shaking of the grate bars by means of the lever, clinkers and ashes are cut away, leaving the fire perfectly free; each edge of bar is sharp, and the motion of the same is made so rapid that clinkers and ashes are removed without dropping the live coals. The following advantages are claimed for this grate. It makes feasible the use of cheaper grades of anthracite coal, such as buckwheat and culm, the latter being specially adapted for this purpose; it effects a saving of steam by cleaning the fire from the bottom, and removing all ashes and clinkers without opening the fire doors, thus avoiding exposure of crown sheet to a rush of cold air, which is a positive injury; it keeps the fire free and open, and at all times in best condition to make steam; a fire on this grate can be cleaned instantly without affecting steam pressure, and the fire being always free and the bars open, less draught is required.

The grate has two separate and distinct movements. First: A shaking movement by which fire may be agitated without opening bars further than when in position. Second: The cut-off movement, by which ashes and clinkers may be removed without opening fire doors.

The New York Steam Company has adopted this grate in its plant which comprises a fire surface of about 3,500 sq. ft. The grate is made in various sizes and may be used in any furnace.

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**The Manchester Ship Canal.**—According to Mr. E. Leader Williams Engineer-in-Chief of the Manchester Ship Canal, England, the plant used on that work consisted of 97 steam excavators, 8 steam dredgers, 173 locomotives, 6,300 trucks and cars, 228 miles of single track railway, costing about $3,150 per mile, 124 steam cranes, 192 portable and other steam engines, and 212 steam pumps of all sizes. The maximum laboring force was 17,000 men and boys and 200 horses. The coal consumed amounted to 10,000 tons per month. The total excavation was about 46,500,000 cu. yds., including 10,000,000 cu. yds. of sandstone rock.

## PRODUCTION OF ASBESTOS IN THE UNITED STATES.*

By E. W. Parker.

The fibrous material known to the trade under the name of asbestos comprises at least two distinct species of minerals, one of which, a variety of hornblende, is properly called asbestos, the other is chrysotile, a variety of serpentine, and may be readily distinguished from asbestos by yielding water when heated in a closed tube. Both asbestos and chrysotile are found in regions of altered crystalline rocks. The former occurs with metamorphic rocks rich in hornblende, while the latter is found in distinct veins penetrating masses of serpentine, which have resulted generally from the alteration of eruptive rocks rich in olivine. It is customary, however, in trade circles to include both varieties under the name of asbestos.

Asbestos is found in the United States in a comparatively narrow belt of metamorphic rocks, extending along the Piedmont region, or eastern slope of the Appalachian Mountains, from New York through Pennsylvania, Maryland, Virginia, North Carolina and South Carolina into Georgia. It is inferior in quality to the best that is mined in Italy or Canada. Its fibers are comparatively short and somewhat spindle-shaped, with occasional cross fractures, which not only render it brittle but diminish its tensile strength. Asbestos is also found in considerable quantities in California and Wyoming, but this also lacks the essential quality of strength of fiber.

The asbestos of Canada properly belongs to the chrysotile variety of formation. It occurs in serpentine in irregular veins varying in thickness from a mere film to six inches. The fibers extend directly across the vein, are long and even as well as flexible, slightly elastic and of great tensile strength.

The production of asbestos in the United States has shown an annual decrease since 1882. The product for 1882 was 1,200 short tons; 1883, 1,000 short tons, and 1884, 1,000 short tons. The product for 1885 showed a decided drop, being only 300 short tons, and this was again reduced to 200 short tons in 1886 and 150 short tons in 1887. In 1888 the product was 100 short tons, valued at $30 per ton. In 1889 the only asbestos mined in this country and marketed came from California, amounting to 30 tons, valued at $1,800. A trifling amount of asbestos, about 300 lbs., was taken out and saved as a by-product in quarrying soapstone in Pennsylvania and sold locally to druggists and chemists at an average price of 9 cents per pound. This small factor has been omitted from the total.

There was a considerable amount of development work done on asbestos mines in Wyoming, but the product was not placed upon the market. These mines are situated about 22 miles from Rock Creek, on the Union Pacific Railroad. The veins and pockets are said to be numerous, extending in all directions, and vary in width from a few inches to over 4 ft. Some of the fibers are reported to be over 40 ins. in length, but that so far obtained is somewhat brittle, though improving in quality as greater depth is reached.

In the statement following, showing the amount of money paid for wages, etc., in asbestos mining in 1889, there is included the sum of $1,900, which was expended in development work at mines in Wyoming. The statement of capital also includes that invested in Wyoming properties. Wages amounted to $2,700; supplies consumed, $525; total, $3,225. The capital invested amounted to $42,600, of which $41,500 was in land, $600 in buildings, machinery, etc., and $500 in tools, implements, live stock, etc. The total number of men employed in the industry was 12.

Asbestos is used in the manufacture of fire-proof paints, roofing, piston packing, felt packing, fire-proof cements, sheet and roll millboards, flooring, and for a covering for steam pipes and boilers. It is largely used in lining for fire-proof safes, and is also made into yarn, cloth, and paper. Non-consuming lampwicks and fire-proof drop curtains for theaters are now being made of this material. Some demand has also been created for its use in the manufacture of insulators for electric wires. The fiber of the American asbestos is more brittle and harsh than the imported and not so well adapted to the manufacture of spun and woven goods. It is said, however, to stand a greater degree of heat than the Canadian or foreign material, and is more suitable for the manufacture of fire proof cement and paint, for which the length of fiber is not essential.

The following table shows the amount and value of asbestos imported and entered for consumption in the United States for the years 1869 to 1889, inclusive:

| Years. | Total. | Unmanufactured. | Manufactured. | Years | Total. | Unmanufactured. | Manufactured. |
|---|---|---|---|---|---|---|---|
| 1869.... | $310 | ..... | $310 | 1879..... | $7,828 | $3,204 | $4,624 |
| 1870.... | 7 | ..... | 7 | 1880 . | 9,736 | 9,736 | |
| 1871.... | 12 | ..... | 12 | 1881..... | 27,786 | 27,717 | 69 |
| 1872 ... | .... | .... | ..... | 1882..... | 15,739 | 15,235 | 504 |
| 1873.... | 18 | $18 | ..... | 1883..... | 24,612 | 24,369 | 243 |
| | | | | 1884..... | 49,940 | 48,755 | 1,185 |
| 1874.... | 152 | 152 | ..... | | | | |
| 1875 .. | 5,783 | 4.706 | 1,077 | 1885*. . | 73,643 | 73,026 | 617 |
| 1876... | 5,881 | 5,485 | 396 | 1886..... | 135,125 | 134,193 | 932 |
| 1877.... | 3,221 | 1,671 | 1,550 | 1887..... | 140,845 | 140,264 | 581 |
| 1878.... | 3,908 | 3,536 | 372 | 1888..... | 176,710 | 168,584 | 8,126 |
| | | | | 1889..... | 263,393 | 254,239 | 9,154 |

*Calendar years. Previous years fiscal years ending June 30.

**The Action of Heat on Carbonic Oxide.**—On heating carbonic oxide to temperatures varying from 500° to a bright red-heat, it is found, says M. Berthelot in *Compt. Rend.* 112, 594–597, that a small amount of decomposition sets in, carbonic acid being formed. This decomposition, however, does not increase in amount as the temperature rises, the only difference being that at the lower temperatures no free carbon is formed. The action takes place even when traces of moisture and other impurities are rigorously excluded. For these reasons, the decomposition cannot be of as simple a nature as is usually represented, but is probably of the nature of a polymerisation, carbonic oxide being a formic anhydride, thus—

$$10\,CO = C_5O_6 + 2CO_2.$$

This suboxide is apparently permanent at temperatures of 500°-550°, but at a red heat is split up into free carbon.

* From Census Bulletin No. 75.

## THE ELASTIC PROPERTIES OF NICKEL STEEL.

It has long been known, says *Engineering*, that the elastic coefficients of ordinary steel vary but little, so that, for instance, Young's modulus is practically the same for both tool steel containing 1·4% of carbon and for the mildest steel used in boiler making. In all ordinary steel, however, the total amount of constituents other than pure iron is but small, the percentage of foreign bodies being rather less than 2, even in hard steels. Just now, however, certain alloys consisting of iron and from 10% to 25% of some other constituent are coming into use, and it is of interest to ascertain whether in these cases also the elastic moduli and Poisson's ratio are the same as for ordinary steel. With this object in view, Mr. E. Mercadier has recently experimented with nickel steel, and has communicated the results to the Paris *Academie des Sciences* in a recent note. The alloys tested by Mr. Mercadier were two in number, and had the following percentages of foreign bodies:

| Number. | Nickel. | Carbon. | Silicon. | Sulphur. | Phosphorus. | Magnesium. |
|---|---|---|---|---|---|---|
| 1 | 5.55% | 0.20% | 0.14% | 0.018% | 0.057% | 0.09% |
| 2 | 25.01 | 0,873 | 0.63 | 0.032 | 0.044 | 1.30 |

As tested at the foundry by tension, Young's modulus for the first of these alloys was found to be 24,800,000 lbs. per sq. in., and for the second 17,600,000 lbs. per sq. in. Mr. Mercadier obtained his results by experimenting on discs of the material which were set in vibration. From the fundamental note of these discs and the first harmonics, it was then possible to deduce both Young's modulus and Poisson's ratio. In this way the experimenter found that the modulus was really higher than that found by tension experiments at the steel works, being 28,800,000 lbs. per sq. in. for the first and 26,540,000 lbs. per sq. in. for the second alloy. The discs with the low percentage of nickel did not appear to be very isotropic, but those made from the 25% alloy were very nearly so. Poisson's ratio was about the same as for pure steel, being nearly 3 in the case of the low metal alloys, but for the high metal it was very near its theoretical value, for an isotropic body, of 4. It would thus appear that the addition of a high percentage of nickel renders the steel isotropic, while at the same time lowering Young's modulus.

## F. & H. FLEXIBLE SPLIT BACK DIES.

The accompanying engraving shows a combination set of dies, taps, die holder and tap wrench, having the following important features: The dies are made of chilled steel with side opening to allow adjustment as desired, but differ from the ordinary die by being capable of expansion or contraction without danger of breaking; they will also remain fixed at any point of adjustment. These desirable points have been attained by encasing each die in a wrought-iron collar about 5-64 in. thick, which

prevents their breaking at the thinnest point. The dies are made in standard sizes, from No. 2 to No. 14 wire screw. The die holder is made of drop forged steel and is arranged to retain this die by means of two set screws, the die having corresponding screw seats. The adjustment is effected by another set screw which enters the split in the side of the die. The tap wrench is made of drop forged steel and differs from the ordinary wrench in having no set screw nor clamp jaws. It is arranged, however, with a series of six square graduated openings, which insures a perfectly firm hold on tap. One of these wrenches, as shown in separate engraving, is packed with each set of dies. The sets which are manufactured by Peter A. Frasse & Co., of New York, are made in four sizes: A, having 5 dies; B, having 6; C, having 8, (as in cut); and D, having 10.

**According to advices** from Samarcand received at St. Petersburg, the 17th ult., Capt. Barchewsky has returned from his explorations in Eastern Bokhara. He reports having discovered gold and large deposits of lead and iron. The region is also stated to be rich in petroleum.

## AUSTRALIAN TIN MINES.

The Victorian tin fields at Mount Wills, near Omeo, Gippsland, have now been prominently before the public for a year, and several of the mines are well at work, says the *Australian Mining Standard.*

The lodes worked by the Mount Wills Proprietary Company have recently been opened to considerably greater depth than they had previously been proved, and the results were of such character as to awaken new interest in the field.

The history of the field is brief. About July, 1888, the Government prospecting party, by the direction of Mr. James Stirling, F. G. S., assistant geologist to the Victoria Mines Department, began to prospect for tin in the headwaters of the Wombat Creek, under Mount Wills. Finding some promising deposits of alluvial tin in the creek bed, they continued their search on the adjacent hills, and finally met with the first tin lode on the main ridge dividing Wombat Creek from Gill's Creek. This discovery is now held under lease by the Gippsland Proprietary Company. Continuing their operations further up the range in the direction of Mount Wills, they came upon large outcrops of stanniferous rocks, which, upon a careful examination, were found to be valuable deposits of lode tin. Still higher up the ridge the immense blow of stone now known as the Pinnacles lode of the Mount Wills Proprietary Company was met with.

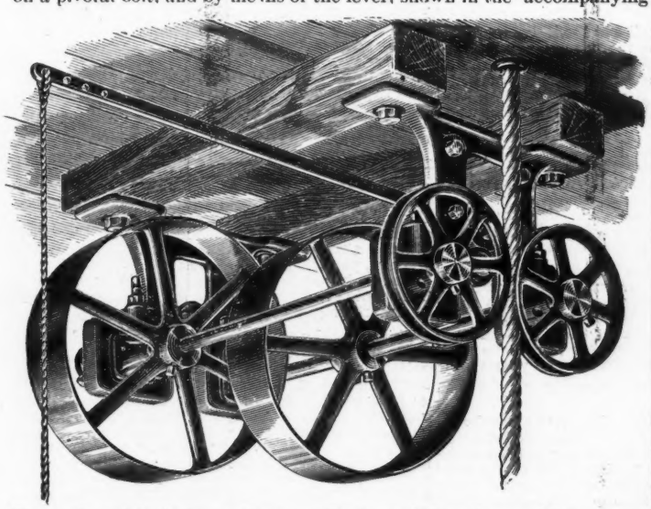
About June, 1890, the Mount Wills Proprietary Company, with a capital of £120,000, was floated in Melbourne. The Mount Wills South Company, with a capital of £10,000, was also formed, principally in Omeo and the adjacent district. The capital of this company has since been increased to £100,000, and its area extended to 350 acres. Fresh discoveries continued to be made almost daily, and various new companies have been formed from time to time. These include the Mount Wills Consols Company, the Mount Wills Block 6 Company, the Mount Wills Extended Company, the Gwendoline, the Patti, the Lady Hopetoun, the Blue Jacket, the Dalkeith, the Invincible, the Blue Jacket Extended, the Good Friday, the Melba, the Blue Jacket South, the Oversight, the Red Jacket, the Melba Extended, the Lilies, and several others.

## THE WILLIAMS COPYING BATH.

The following is a description of a new copying bath made by the Williams Typewriter Company, of Brooklyn, N. Y., which seems to possess several important advantages. In using this bath, brush, water cup and blotters are unnecessary, as the sheets furnished are designed to take their place. It consists of a deep pan having a heavy felt pad in the bottom, which is covered by a wire screen, separating the cloths from the felt; above the cloths is the lid, having on its under side a heavy felt pad. The cloths are wet, and, having been wrung, are placed in the tray and the lid adjusted. The surplus moisture goes through the wire and is absorbed by the bottom felt. The moisture is supplied from the felt on the under side of the lid, and the occasional dampening of this is all that is necessary. The manufacturers claim that the sheets are moistened uniformly, require very little attention, and will copy one letter or fifty. The sheets are chemically prepared, do not mildew, and as many as fifty sheets may be kept equally moistened.

## ARTHUR'S UNIVERSAL ROPE GRIP.

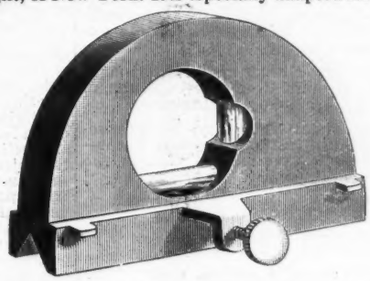
This machine is designed for application on any ordinary rope hoist, where it is desired to apply power without installing a special plant for that purpose. It is constructed and operated as follows: Two parallel shafts, each carrying a pulley and grooved grip wheel, run in swivel boxes (described and illustrated in the ENGINEERING AND MINING JOURNAL, August 22nd, 1891), which allow a movement of the wheels to and from each other. The hanger holding the grip end of the moveable shaft turns on a pivotal bolt, and by means of the lever, shown in the accompanying



illustration, this shaft may be moved in toward the other, which movement brings the grip wheels in engagement with the rope. The machine is adapted to transmit power from dynamo, small engine, or line of shafting, having capacity of from 5 to 6 H. P. All parts are made interchangeable so that machine may be worked at either end; also, the lever may be made to operate by either upward or downward pull. No gearing being used the machine is noiseless and does away with this general objection to rope grips. The parts are few and arranged on simple principles. The space required by this machine is 16 ins. by 33 ins. The machine is manufactured by the Arthur Company, of New York.

## A COMBINED POCKET LEVEL AND PLUMB.

A combined level and plumb, which is illustrated herewith, for which the following advantages are claimed, is now being introduced by Messrs. Church & Sleight, of New York. It is especially adapted for shop use, as the



glasses are thoroughly protected and the instrument is very strongly made throughout. It has set screw and shoulder arranged for attachment on square or straight edge. It is said to be especially adapted for key seating, lining shafting, or running, and is grooved for use on underside of work.

**Hardening Plaster.**—The following process comes from France for hardening plaster, so that it may be used for flooring, as wood and tile are at present, says *Engineering.* About 6 parts of good quality plaster are intimately mixed with 1 part of freshly slaked white lime, finely sifted. The mixture is then laid down as quickly as possible, care being taken that the trowel is not used on it for too long a time. The floor should then be allowed to become very dry, and afterward be thoroughly saturated with sulphate of iron or zinc—the iron giving the strongest surface. With sulphate of zinc the floor remains white, but when iron is used it becomes the color of rust. If linseed oil, boiled with litharge, be applied to the surface it becomes a mahogany tint.

## DIVIDENDS PAID BY MINING COMPANIES DURING AUGUST AND FROM JANUARY 1ST, 1891.

| NAME OF COMPANY. | Paid in Aug. | Paid since Jan. 1st. | NAME OF COMPANY. | Paid in Aug. | Paid since Jan. 1st |
|---|---|---|---|---|---|
| Adams, Colo. | $7,500 | $45,000 | Little Rule, Colo. | $10,000 | $80,000 |
| Alaska-Treadwell, Alaska | ..... | 225,000 | Mammoth, Utah | ..... | 50,000 |
| Alice, Mont. | 25,000 | 50,000 | Maxfield, Utah | ..... | 240,000 |
| American, Idaho | ..... | 100,000 | Mayflower Gavet, Cal. | 50,000 | 18,000 |
| American Belle, Colo. | ..... | 50,000 | May Mazeppa, Colo. | 37,500 | 133,000 |
| Aspen, Colo. | ..... | 100,000 | Mollie Gibson, Colo. | 100,000 | 500,000 |
| Atlantic, Mich. | ..... | 40,000 | Montana Ltd., Mont. | 39,600 | 118,800 |
| Aurora, Mich. | .... | 100,000 | Morning Star, Colo. | ..... | 50,000 |
| Bald Butte, Mont. | ..... | 40,000 | Morning Star D., Cal. | 2,400 | 13,200 |
| Ballarat-Smuggler, Colo | ..... | 6,000 | Mt. Diablo, Nev. | ..... | 30,000 |
| Bannister, Mont. | 6,000 | 48,000 | Mt. McClellan, Colo. | ..... | 12,540 |
| Bates-Hunter, Colo. | 2,500 | 12,500 | Napa, Cal. | ..... | 30,000 |
| Best Friend, Colo. | ..... | 10,000 | New Guston, Colo | ..... | 220,000 |
| Bimetallic, Mont. | 70,000 | 560,000 | Newton, Cal. | ..... | 5,000 |
| Boston & Mont., Mont. | 125,000 | 375,000 | North Banner Cons., Cal. | .... | 15,300 |
| Calliope, Colo. | ..... | 5,000 | North Commonwealth, Nev. | ..... | 25,000 |
| Calumet & Hecla, Mich | ..... | 1,000,000 | North Star, Cal | ..... | 50,000 |
| Centennial-Eureka, Utah | 30,000 | 210,000 | Ontario, Utah | 75,000 | 600,000 |
| Central, Mich. | ..... | 20,000 | Osceola, Mich. | ..... | 100,000 |
| Champion, Cal. | 3,400 | 28,900 | Parrot, Mont. | 18,000 | 322,000 |
| Clay County, Colo. | 4,000 | 32,000 | Petro, Utah | 7,500 | 25,000 |
| Cœur d'Alene, Idaho. | 10,000 | 50,000 | Plumas Eureka | ..... | 35,150 |
| Con. Cal. & Va., Nev. | ..... | 108,000 | Quicksilver, Pref., Cal. | ..... | 118,000 |
| Copper Bell, Mont. | ..... | 13,500 | Quincy, Mich. | 200,000 | 400,000 |
| Cortez, Nev. | ..... | 250,000 | Red Cloud, Idaho | 10,000 | 20,000 |
| Daly, Utah | 37,500 | 300,000 | Retriever, S. Dak. | ..... | 12,500 |
| Deadwood—Terra, S. Dak. | 10,000 | 10,000 | Rialto, Colo. | ..... | 17,250 |
| DeLamar, Idaho | ..... | 72,000 | Richmond Cons., Nev. | 13,500 | 33,750 |
| Derbec Blue Gravel | ..... | 10,000 | Running Lode, Colo. | 5,000 | 20,000 |
| Elkhorn, Mont. | ..... | 200,000 | San Miguel Con, Colo. | ..... | 300,000 |
| Franklin, Mich. | ..... | 80,000 | Sierra Butte, Cal. | ..... | 25,000 |
| Glengarry, Mont | ..... | 10,000 | Silent Friend, Colo. | ..... | 32,500 |
| Gold Rock, Colo. | 3,750 | 11,250 | Silver Glance, Colo | ..... | 4,500 |
| Granite Mountain, Mont | 100,000 | 1,000,000 | Silver Mg. of L. V., N. Mex. | ..... | 75,000 |
| Hecla Con., Mont. | 15,000 | 120,000 | Tamarack, Mich. | ..... | 400,000 |
| Helena & Frisco, Mont. | ..... | 50,000 | Teal & Poe, N. Mex | ..... | 5,250 |
| Helena & Victor, Mont. | ..... | 40,000 | Whale, Colo. | ..... | 5,000 |
| Homestake | 12,500 | 100,000 | W. Y. O. D., Cal. | ..... | 4,500 |
| Horn Silver, Utah | ..... | 100,000 | Yankee Girl | ..... | 260,000 |
| Idaho, Cal. | 9,300 | 66,850 | | | |
| Iron Mountain, Mont. | ..... | 25,000 | Total | 1,039,950 | 9,675,441 |
| Jackson, Nev. | ..... | 5,000 | | | |

## PATENTS GRANTED BY THE UNITED STATES PATENT OFFICE

The following is a list of the patents relating to mining, metallurgy and kindred subjects issued by the United States Patent Office.

TUESDAY, SEPT. 1ST, 1891.

458,601. Rock Drill. Olaf Terp, Breslau, Germany.
458,612. Rock Drilling Machine. Walter Arnold, Sauks Rapids, Minn.
458,622. Steam Separator. Edward Erxleben, Chicago, Ill.
458,642. Smoke Consuming Furnace. Carl Strauss, Berlin, Germany.
458,740. Rock or Ore Crusher. George W. Taft, Kennett Square, Pa.
458,784. Method of and Apparatus for Determining the Temper of Steel. Carl A. Caspersson, Forsbacks, Marzretchill, Sweden.
458,817, 458,8'8, 458,819. Steam Boiler. John Baird, New York, N. Y.
458,826. Amalgamator. Henry Cook, Philadelphia, Pa.
458,836. Purifier for steam boilers. Eliza E. Kintzel, La Junta, Colo., administratrix of James E. Kintzel, deceased, Assignor of one-half to William L. Van Harlingen, Jr., same place, and William L. Van Harlingen, Sr., Oakland, Cal.
458,837. Ore washer and concentrator. Charles F. Pike, Philadelphia, Pa.
458,838. Amalgamator. Charles F. Pike, Philadelphia, Pa.
458,868. Electric coal mining machine. Charles J. Van Depoele, Lynn, Mass.
458,892. Boiler flue scraper. George R. Ford, Grand Rapids, Mich.
458,958. Ore washer and concentrator. Charles F. Pike, Philadelphia, Pa.
458,975. Air compressor regulator. Bruno V. Nordberg, Milwaukee, Wis., Assignor to the Bruno Nordberg Company, same place.

## PERSONALS.

Dr. R. A. F. Penrose, Jr., of the Geological Survey of Arkansas, was in New York this week.

The Hon. W. L. Scott, of Erie, Pa., the well-known coal operator of Pennsylvania, is dangerously ill at his home.

Mr. Arthur Brittner, mining engineer, manager of the Promontorio mine, Promontorio, Durango, Mexico, is in New York on mining business.

Mr. R. J. Hilton, of Salt Lake City, Utah, Secretary of the Eureka Hill Mining Campany, has returned to Utah after a three months' visit in the East.

Mr. James McCutcheon has resigned his position as superintendent of construction of the Lake Superior Iron Company, and is about to assume charge of a stone quarry at L'Anse, Mich.

Prof. Wm. P. Blake, of Hartford, Conn., who has recently returned from a professional visit to Mexico, has accepted the position of general manager of the Wisconsin Lead and Zinc Company, with headquarters at Shullsburg, Wis.

Messrs. A. T. Hollingsworth, W. H. Maw, and J. Dredge, proprietors of *Engineering*, have transferred their interests to "Engineering," Limited, a company organized with a capital of £180,000, which also takes over the "Bedford Press."

Mr. E. K. Field, of Corea, is in Hazleton, Pa., studying the methods of coal mining in use in that district. Mr. Field has been sent to America by the Corean government for this purpose. From Hazleton he will go to Colorado to inspect gold and silver mines.

Prof. W. S Chaplin, Professor of Engineering at Harvard University since 1885, has been elected Chancellor of Washington University of St. Louis, Mo. Previous to his professorship at Harvard, Professor Chaplin held many important positions, among which was the professorship of civil engineering at the Imperial University at Tokio, Japan.

Mr. William Kent, mechanical engineer, of New York, has been appointed third member of the Advisory Committee of the American Society of Mechanical Engineers upon engineering tests at the World's Fair. The other members of the committee are Dr. Chas. E. Emery, of New York, and Prof. R. H. Thurston, of Cornell University; as we noted in our issue of Aug. 29th.

The following members of the expedition from the Academy of Natural Science, Philadelphia, to the west coast of Greenland, which left New York June 6, arrived at Halifax, N. S., on the 30th ult.: Prof. Angelo Heilprin, J. F. Holt, Dr. N. R. Keely, Dr. W. E. Hughes, Levi Mengel, Dr. B. Sharp, Dr. W. H. Burke, Frazer Ashurst, and Alex. C. Kenealy. The members express themselves as highly gratified with the result of their visit to west Greenland. They return laden with specimens of all descriptions. The Peary expedition to the north of Greenland, which started at the same time, will remain there all winter.

## OBITUARY.

William M. Mallory, a prominent coal operator, owner of the Fairmount and Hillman Colleries at Pittston, Pa., died on the 30th ult. at his home in Towanda, Pa. He had been sick for seven weeks, and the immediate cause of his death was heart failure. He was 74 years of age.

E. P. Lovejoy, a well-known resident of Wabuska, Lyon County, Nevada, died suddenly on the 26th ult. He was born in St. Louis, Mo., in 1836. He had been on the Pacific coast for over 30 years, and followed mining in early days in California. He was for a number of years editor of the Trinity County *Journal*, and was well known on the Comstock Lode.

## SOCIETIES.

The International Congress of Geologists has fixed the place of its next meeting at some point in the vicinity of Mont Blanc, Switzerland, at a town yet to be determined, and has provisionally agreed to hold the 1897 meeting at St. Petersburg, in accordance with an invitation from the Czar. Vice-president Le Conte presided at the sixth day's (Sept. 1) session, at which the usual resolutions of thanks were voted to institutions and individuals to which the Congress has been placed under obligations during the present meeting. An excursion to the various points of interest on the Potomac took place in the afternoon. On the 2d inst. began the long excursion, the contemplated shorter excursion through the Appalachian Mountains having been abandoned.

A meeting was held at the Columbian University, Washington, D. C., on the 28th ult., to consider the organization of the directors of the National and various state geological surveys for the advancement of official geological work, which promises to result in the formation of one of the most valuable organizations which have been formed in the country for the advancement of geological work, and especially of official geological work. There were present at the meeting Maj. J. W. Powell, director of the United States Geological Survey; Prof. James Hall, state geologist of New York; Prof. J. M. Stafford, state geologist of Tennessee; Prof. J. W. Spencer, state geologist of Georgia; Prof. E. A. Smith, state geologist of Alabama; Prof. J. A. Holmes, state geologist of North Carolina; Mr. Arthur Winslow, state geologist of Missouri; Mr. E. T. Dumble, state geologist of Texas; Prof. J. Lindahl, state geologist of Illinois. Maj. Powell was elected chairman of the meeting and Mr. Winslow secretary. After a few preliminary remarks in explanation of the reasons for calling the meeting, Mr. Winslow read a paper suggesting a plan of organization and explaining the objects of, and the results to be derived from, such an official association. As prominent among the important objects of the proposed association, he cited the following: 1. The determination of the proper objects of public geologic work. 2. The improvement of methods. 3. The unification of methods. 4. The establishment of the proper relative spheres and functions of national and state surveys. 5. Co-operation in works of common interest and the prevention of duplication of work. 6. The elevation of the standard of public geologic work and the sustenance of an appreciation of its value. 7. The inauguration of surveys by states not having such at present, to co-operate with the other State surveys and with the national survey. As an immediate result of this meeting a committee of six was elected to consider the matter of organization, with the power to frame a constitution and by-laws, to be reported to the association at a time and place to be selected by the committee. This committee consists of Maj. J. W. Powell, director of the United States Geological Survey, chairman; Prof. E. A. Smith, state geologist of Alabama; Prof. J. A. Holmes, state geologist of North Carolina; Dr. J. C. Branner, state geologist of Arkansas; Mr. Arthur Winslow, state geologist of Missouri, and Prof. W. H. Winchell, state geologist of Minnesota. The United States Association of Government Geologists is to be the title of the new organization.

## EXPORT NOTES.

During 1890 Japan imported from the United States mining machinery valued at 49,857.78 yen, or about $37,900.

The Egan Company (Cincinnati, O.) has received a large order for wood-working machinery from Australia.

The value of the German exports to this country during the calendar year 1890 was $101,941,717, an increase of $12,863,341, or 14.4%, as compared with 1889.

A cargo of railroad machinery valued at over $150,000 was lately shipped from Philadelphia to Brazil. It is intended for the new railroads building in that country by English capitalists.

The value of exports from New York during July was: Machinery, $380,170; hardware, $220,121; agricultural implements, $271,640; clocks and watches, $100,636, and electrical materials, $47,347.

The Pusey & Jones Company of Wilmington is building two steel stern-wheel steamers for Carthagena, United States of Colombia. They will be shipped in pieces and put together at their destination.

An Italian-American exhibition will be held in Genoa in 1892 to honor the memory of Columbus. It will be limited to samples, as the space devoted to the purpose precludes a general display of Italian-American products. The special object of the exposition is to stimulate traffic between Italy and the two Americas.

The United States consul at Antigua, West Indies, calls attention to the total absence in that colony of many articles of American hardware, such as kitchen utensils, which would be very acceptable to the people, and he suggests that American manufacturers send samples of such articles to the merchants of that island.

The Bureau of American Republics has information that the Colonial Government proposes to grant to Messrs. Turnbull, Stewart & Co. a subsidy to maintain direct speedy communication between the Island of Granada in the West Indies and New York. The government agrees to pay $5,000 in quarterly installments for one year from the day the first steamer leaves Granada for New York.

A combination comprising 62 German mechanical and industrial firms has just been formed with a view of avoiding competition in connection with export operations. The combination comprises some of the most important German industrial concerns. A council of five members will direct the operations of the combination, which aims principally at the development of industrial relations with Greece, Turkey, Asia Minor and other Oriental countries.

The French import duties on steam engines and boilers have been considerably increased and many vexatious clauses inserted in the measure. With every steam engine or steam boiler or part of same a detailed tracing must be sent. Should there be any part missing, or should the engine not appear complete, the duty on the incomplete part will be increased 10%. In addition to the detail drawing, a complete list of each part made in cast iron, wrought iron, brass, or gun-metal, giving full particulars and weights, must be sent. Should any of these declarations prove incorrect a fine will be enforced. Boilers are to be charged separately unless the engine is either semi-fixed or portable.

Concerning the regulations finally adopted for the transportation of bonded goods over Canadian railroads the Montreal *Journal of Commerce* says: The United States official is bound to compare the goods in each car which he seals on a foreign territory with the manifest, a copy of which is sent to the custom-house at place of delivery. The manifest accompanying the car will be the basis of the entry at the frontier. No unloading will be required, unless there are signs of the consul's seal having been tampered with. There seems nothing in these regulations likely to embarrass the transcontinental and international traffic of either the United States or Canada.

A new commercial code affecting foreign merchants having dealings in Mexico has recently been adopted by that republic. Under the new code every commercial house desirous of conducting business in Mexico must have its company's contracts registered, and joint stock companies will be required, further, to publish monthly a statement of their affairs. The establishment of warehouses is permitted for storing as well as for the deposit, superintendence and sale of the goods. Every depositor is to receive a warrant, which may be given as security. The holder of the warrant is to be entitled to the goods, even in event of the depositor being declared bankrupt after giving up the warrant. The legal rate of discount is reduced from 12% to 6%.

The reciprocity treaty with San Domingo provides for the duty free admission into that country of agricultural implements, mining and mechanical tools, and material for the construction and equipment of railroads. All other manufactures of iron and steel will be admitted with a reduction of 25% on the present duty. The imports into and exports from the United States to Santo Domingo for the last four years were as follows:

| | Imports. | Exports. |
|---|---|---|
| 1887 | $1,380,126 | $1,011,414 |
| 1888 | 1,459,392 | 792,560 |
| 1889 | 1,454,261 | 1,150,651 |
| 1890 | 1 951,013 | 926 651 |

Of our principal exports to Santo Domingo in 1890, machinery was valued at $87,771, mineral oil $35,271, lubricating oil $4,236, and wire $11,501.

Philadelphia capitalists, represented by the Hon. James W. Porch, formerly United States Consul General at the City of Mexico, according to a recent telegraphic dispatch from that city, will soon put on a line of large freight steamers to run, under a concession just granted them, between Philadelphia or Baltimore and Mexican Gulf ports. This line will fly the Mexican flag, and in case of a foreign war the Government will have the right, on paying the company a proper sum, to arm the steamers and employ them as cruisers. No subsidy is given to the line, but many valuable special privileges. Passengers will be carried only between Mexican ports. The company will connect at the mouth of the Mississippi with special steamers. It is intended to compete with the Ward Line in the Henequen trade and also develop the fruit trade.

"At present," says Mr. Frank G. Carpenter, who has traveled extensively in Mexico, "the chief and only things in which the United States has the lead in Mexican trade are coal, oil and machinery. American sewing machines you find all over Mexico, and you will see American threshing machines and wagons everywhere coming in. A Mr. Rose, who represented a manufacturing company of Buffalo, stated that he had sold $200,000 worth of sugar mills and other machinery during the past year, and Seagur, Guernsey & Co., of the City of Mexico, who handle all kinds of American goods, are said to have a good trade in electrical plants, steam engines of various kinds, typewriters, plows and American paper. This firm is the most important American firm in Mexico. It has studied the trade, and is introducing all kinds of American goods."

The mineral oil exported from the United States to South America in 1890 amounted to 22,149,135 gallons, all refined, no crude oil being consumed there, valued at $2,512,540. Brazil took 8,858,011 gallons; Chili, 3,167,973 gallons; Uruguay, 3,515,423 gallons, and Venezuela, 983,720 gallons. The Argentine Republic has heretofore imposed a duty of 25c. per liter, or 1·36c. per pint, on all mineral oils imported. This duty, imposed to encourage the development of her own oil fields, has been reduced, as it seems to be proved that no true petroleum is found in that country, its asphalt petroleum being entirely unsuited for the purposes for which petroleum is used. This reduction in the duty will undoubtedly increase our exports to the Argentine Republic, which for the last six years have been as follows:

| | Gallons. | Values. | | Gallons. | Values. |
|---|---|---|---|---|---|
| 1885 | 3,716,050 | $395,694 | 1888 | 3,506,952 | $426,654 |
| 1886 | 2,505,697 | 278,188 | 1889 | 6,424.669 | 726,795 |
| 1887 | 4,354,016 | 457,337 | 1890 | 3,461,260 | 441,730 |

The foreign trade of Porto Rico, with which we ave lately entered into a special business arrange-

ment covered by a reciprocity treaty, is extensive. In 1889 it amounted to $25,244,240, of which $11,066,683 consisted of exports and $14,177,557 of imports. Our receipts in that year from Porto Rico were over one-third of her total shipments; our exports less than one-sixth of the total imports into the island. The following table shows the trade between the two countries for five years in the imports into and exports from the United States:

| | Imports. | Exports. |
|---|---|---|
| 1886 | $4 594.544 | $1,676,929 |
| 1887 | 4,661,690 | 1,707,241 |
| 1888 | 4.412,483 | 1,920,385 |
| 1889 | 3,707,373 | 2,175,458 |
| 1890 | 2.247.700 | 2,247,700 |

Of the island's total imports of metals only 13% came from this country, but all the petroleum and 14 out of 78 tons of plows were supplied by the United States. Among our exports to Porto Rico in 1890, iron and steel manufactures amounted to $94,739; mineral oil, $131,905; glassware, $14,670, and coal, $13,425.

Adolph Schreiber and G. C. Powers, who, some months ago, were sent as commissioners by the Illinois Central Railroad to Mexico, Central and South America, for the purpose of investigating the trade conditions of those countries and the prospect of securing direct trade with the West via New Orleans, state, according to the *Iron Age*, that New Orleans fails to receive her share of the trade because no suitable effort has been made to obtain it. They advise the running of two steamships direct from New Orleans to Havana and Vera Cruz, one to Colon via Greytown and one to Laguayra. To secure the benefit of direct intercourse the report repeats in substance the recommendations of our consuls respecting the choice of goods, the manner of shipping them, and the terms on which they should be sold, concluding as follows: 1. Spanish-American markets require special sizes, patterns and styles of goods; the exact article demanded must be furnished, as no substitute, however closely alike or superior to the one ordered, will be accepted by the consumer. 2. Packing of goods requires the most careful attention. It should be borne in mind that at most Spanish-American ports steamers transfer and receive their cargoes in lighters while at anchor in heavy surf; that the ports are mere points of transit for merchandise destined for interior points; that customs duties are, in most instances, levied on gross weight of packages, no deduction being allowed for breakage or other damage. Goods should therefore be put up with reference to protection against damage by water, to adaptability to transportation by mules or light wagons and to the lightest packing consistent with absolute safety of contents. The custom in Spanish America is to buy foreign goods on a credit of six months; which credit may be extended to nine or even 12 months, interest at 8% per annum being paid on the extension. The whole trade of Europe is conducted on this basis and losses from credits are of extremely rare occurrence. In Cuba and Mexico business is gradually tending to a cash basis; in the former country considerable capital is accumulating at Havana, and, the disposition of merchants being to keep within their means, long credits are seldom if ever asked for. In the latter, with the construction of railroads and the establishment, at all important localities, of branches by the banks of the capital, a new direction is given to the movement of commerce, and old methods are being, if not abandoned, at least greatly modified.

## NDUSTRIAL NOTES.

The Lehigh Iron Company's furnaces near Allentown, Pa., are all in blast.

The Pottsville Iron and Steel Company started its 12-inch finishing mill at Fishback on the 25th ult. All of the mills of the company are now in full operation.

The Cambria Iron Company's furnace No. 2, which has been in operation at Hollidaysburg, Pa., for about 25 years, has been blown out and the company has decided not to re build it.

Messrs. Norton Bros., of Chicago, write under date of August 19th that they had just received 140 pigs (a little more than 4 tons) of tin from the Tenescal mines, San Bernardino county, Cal. This is the first lot of California tin to be shipped east of the Rocky Mountains.

The Woodstock Iron Company's charcoal furnace No. 2 at Anniston Ala., was burned on the 29th ult. All the woodwork was destroyed and 100 000 bushels of charcoal set on fire. It is still burning. The loss is estimated at $30,000. The machinery and brickwork were not damaged much.

The Jasper Iron Company has been incorporated at Jasper, Tenn., by Mr. H. Baker, formerly of the Baker Chain and Wagon Manufacturing Company, Allegheny, Pa. The capital stock is $600,000, of which about $200,000 is paid in. The company will manufacture field hardware, car forgings, bar iron and steel, etc.

The Pottsville Iron and Steel Company, of Pottsville, Pa., has been granted a rule for a preliminary injunction in the case of the company against George Owen, president of the Amalgamated Association *et al.* to restrain them from interfering with workmen employed at the works. The bill in equity chages conspiracy, threats and annoyance to non-union men.

The Wm. Powell Company, 52 Plum Street, Cincinnati, O., has just issued a new catalogue of steam work embracing a full line of goods used by steam fitters, engine builders, electric light plants, etc., including all improvements to date in its specialties, which includes a full assortment of sight feed lubricators, sight feed signal oilers, and the Star valves. A copy of this catalogue will be mailed to any one interested, upon application.

The American Axe and Tool Company runs nine axe factories, situated respectively at Johnsonville and Gowanda, New York; Beaver Falls, Mill Hill and Bellefonte, Pa.; Douglass, Mass., and Cleveland, O. It controls about half the production of axes in the United States. On the 31st ult. the employés of five of the factories—the largest run by the company—struck against the company's efforts to compel them to leave their unions. The Federation of Labor is backing the strikers financially.

The Southern Interstate Immigration Association will in October and November, 1891, hold an exposition at Raleigh, N. C., representing the resources and capabilities of the South. An important feature of the exposition will be a colored exhibit, entirely under control of the colored people of the South, which is intended to show the industrial advancement and capabilities of that race. The exhibit, which will be permanent, will be taken to Chicago in 1893, to constitute a part of the Columbian exposition. The plans of the Southern Interstate Immigration Committee are meeting with much encouragement.

The Standard Oil Company, according to a correspondent of *Industries*, is unlikely to succeed in acquiring a monopoly of the petroleum trade in Germany, as the Pott Tank Company at Mannheim and Stettin-American Import and Storage Company at Stettin still remain independent. The works of the Stettin Company are under construction and will be completed in October, when the works of the Standard Oil Company also will be ready. In the competition between the Pott Company and the Standard Oil Company at Mannheim, the former company seems to have the advantage, as it has gained the support of the petroleum merchants of that district.

## MACHINERY AND SUPPLIES WANTED AT HOME AND ABROAD.

**If any one wanting Machinery or Supplies of any kind will notify the "Engineering and Mining Journal" of what he needs, his "Want" will be published in this column.**

**Any manufacturer or dealer wishing to communicate with the parties whose wants are given in this column can obtain their addresses from this office. No charge will be made for these services.**

**We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning American goods of any kind, and forward them catalogues and discounts of manufacturers in each line, thus enabling the purchaser to select the most suitable articles before ordering.**

**These services are rendered gratuitously in the interest of the subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.**

### GOODS WANTED AT HOME.

**2,365.** Second-hand street car rails and cars in good condition. Alabama.

**2,366.** An electric plant to be run by water power. Alabama.

**2,367.** Improved brick machinery. Alabama.

**2,368.** Improved lime kiln apparatus. Alabama.

**2,369.** A stone crusher with engine and boiler complete, for crushing 75 tons per day of 10 hours North Carolina.

**2,370.** A veneer cutting machine to cut orange box sides, which are 27 in. long and $\frac{3}{16}$ to $\frac{1}{4}$ in. thick. Florida.

**2,371.** A second-hand locomotive to be used in switching in and about coke ovens. Minnesota.

**2,372.** Sand crushing machinery. Tennessee.

**2,373.** A full set of hoop, stave, barrel and heading machinery. West Virginia.

**2,374.** Engines for a side wheel steamer, with independent shafts. Boats will be 175 ft. long, 50 ft. beam over guards, sharp, forward and aft, flat bottomed for smooth water; to make at least 15 miles per hour. Also a 14×16 compound engine for tug. Want everything complete for both boats, including all connected with engines and boilers. Texas.

**2,375.** Machinery for rolling zinc into sheets and for making zinc white. Missouri.

**2,376.** Electric light plant for street and commercial lighting. Mississippi.

**2,377.** Steel rails, railway equipment, drawbridges, and creosote piling. Florida.

**2,378.** A new improved 10-spout wheat drill. Virginia.

**2,381.** A pump to deliver 100 gallons per minute, 125 ft. elevation and one-half mile distance; also a plunger pump of about 2,500 gallons per hour capacity, or other type that will handle dirty water. South Carolina.

**2,382.** Washing and pulverizing machines for roots similar to potatoes. Illinois.

**2,383.** Saw mill machinery. North Carolina.

### AMERICAN GOODS WANTED ABROAD.

**2,379.** Rosin, oil of turpentine, and any other raw products for the manufacture of varnishes. Canada.

**2,380.** Machinery for a small paint factory, exclusive of motive power. Canada.

## GENERAL MINING NEWS.

### ARIZONA.

#### PIMA COUNTY.

John Lyle, owning a mining claim recently reported in rich mineral in Oro Blanco district, has asked United States District-Attorney Wilson's help to recover the claim which Sonora Mexicans have jumped. Mr. Lyle makes affidavit that when proceeding to work the mine he was stopped by six armed Mexicans from Sonora, they having illegally taken possession of the mine. They notified Mr. Lyle that they would continue to hold the mine forcibly under a mining claim made by three of their number. The owner denies that the mine is in Sonora, but says that it is in Arizona, one and a half miles from the boundary line. Mr. Lyle says that he has been in undisputed possession of the property for the last year, and that it is because of the reported strike in the mine that the Mexicans jumped it. Steps will be taken to place the owner again in possession if it is found that he is correct in his statement as to the boundary line.

(From our Special Correspondent.)

PEERLESS MINING COMPANY.—The west crosscut, 600 level, has been completed and shows the vein to be 15 ft. in width at this point. Mostly all of it is mineral-stained quartz showing ore of fair grade.

PEER MINING COMPANY.—Ore continues to be extracted from the stopes on the 100 level and is of good milling grade. The work of drifting north on the vein, 150 level, has been commenced, the vein showing strong in the face.

#### PINAL COUNTY.

SILVER KING MINING COMPANY.—This company has just received $4,200 from the sale of ore.

### CALIFORNIA.

#### AMADOR COUNTY.

BAY STATE MINING COMPANY.—The new shaft at this company's property is now down 80 ft. which is the depth of the old shaft sunk many years ago. It is intended to go several hundred feet—perhaps 500—before drifting is commenced in the ledge. The water, which nearer the surface was very troublesome, is now under control, and sinking is progressing rapidly.

#### BUTTE COUNTY.

GOLDEN FEATHER CHANNEL, LIMITED.—A dispatch from the manager states that the foot dam has been finished and draining of claim commenced last week.

(From our Special Correspondent.)

GOLD BANK.—Twenty stamps are now dropping on very rich ore. Much better results have been obtained since Mr. W. W. Stow, of San Francisco, the owner of the property, removed the Huntington crushers and put in stamps and eight concentrators. The concentrated sulphurets are chlorinated.

SHAKESPEARE.—Active operations were begun at this mine recently. A shaft has already been sunk 170 ft., the rock at that depth proving very rich. The ledge crops at the surface for a considerable distance along its strike, which is north and south, and dips westerly at an angle of 80°. While the thickness of the vein has not been determined, it is thought to be one of the richest ledges in the State, judging from the rock now being mined.

#### CALAVERAS COUNTY.

According to the Ione *Echo*, Camp Seco, which has been depopulated for ten years, is at present experiencing a revival. The copper mines in the vicinity are being put in readiness to produce ore, and a large number of men are employed about the mines and in grading for the erection of a smelter to be used in working the ores.

#### MONO COUNTY.

(From our Special Correspondent.)

BULWER MINING COMPANY.—Most of the recent work done in the mine has been in the way of repairs. The water is being drained from the main north drift and No. 3 and No. 4 cross-cuts, 200 level, preparatory to cleaning out and relaying track in order that a large block of virgin ground at the north end of the mine may be reached.

#### NAPA COUNTY.

(From our Special Correspondent.)

GREAT WESTERN QUICKSILVER MINING COMPANY.—Telegraphic advices tell of the destruction

by fire of the large fine ore furnace at the company's works, near Middleton, on Aug. 26. The furnace was nearly new and cost $38,000. It was with difficulty that the adjacent buildings were saved.

NEVADA COUNTY.

MOHEGAN GOLD MINING COMPANY.—The annual meeting of the stockholders of this company was held in Grass Valley recently, and a Board of Directors and officers for the ensuing year were elected as follows: Wm. Campbell, president; J. T. Morgan, vice-president; John Werry, secretary; J. C. Phillips, J. T. Robbins, and John Skewes. The Mohegan is a Gold Flat property recently bonded to the newly organized Gold Flat Mining Company.

(From our Special Corresponde nt.)

ALLISON RANCH.—This mine has been bonded for $75,000 from the owners, A. E. Davis and others, by John S. Carter, foreman of the Idaho mine at Grass Valley, and F. Burns, a mining engineer of Nevada City.

SAN BERNADINO COUNTY.

(From our Special Correspondent.)

The carbonate district at Oro Grande, in this county, still continues to excite interest. A new town is to be established about half a mile south of the old station, a hotel is to be built, and the place is to take on a genuine boom aspect, if all reports are to be believed. To induce this boom and to support the boomers are the Carbonate mine, the extreme richness of which has been heralded all over the country; the Goblet, on the same vein, and numerous other prospects which show hard carbonate ores. Some of the holes only 10 ft. deep certainly promise well for the future. Mr. Carell has a very encouraging prospect at the contact of lime and porphyry. The shaft is only 10 ft. deep and shows considerable ore carrying iron, lead carbonate, and black oxide of manganese. All of the ores improve in appearance with depth, if not in richness, though the value also usually increases somewhat. It cannot be called a poor man's camp. The mines require development. The famous Carbonate mine only found its rich gold rock at 180 ft. from the surface. The surface iron ores are quite widely distributed, but the formation is very perplexing to the prospectors who are unacquainted with geological freaks. The formation is essentially sedimentary, being tilted, folded and broken by upheavals and compression and traversed by eruptive dikes or rent by injected sheets. The Carbonate vein stands at an angle of 90° from the horizon, while in the Goblet the same vein, undoubtedly, lies at an angle of 55° or less. Messrs. Embody, of Mono mine (Utah) fame, and Captain Blaisdell, of Los Angeles, own a good property in the camp, showing a broad belt of $7 or $8 free milling gold rock, evidently a highly compressed felsite or something resembling it. The owners of the Lyke-McCrady mine are waiting for a mill. They thought $8 a ton for custom work a little steep. A run of many tons of this ore returned something over $50 a ton. Prospectors have scattered over the entire region, and have located ground everywhere, sometimes three or four claims deep. The result is that no claims can be had unless they are purchased, and it is usually cheaper to buy than to locate under such circumstances. Beside the gold and silver mines Oro Grande has large lime and granite quarries and great deposits of verde antique, and other beautiful ornamental marbles. The district is about 8 miles wide and 12 miles long, and is surrounded by mineral lands on all sides, Calico being 25 miles to the northward, Oro district 20 miles east and Black Hawk and Silver Reef southeast.

SAN DIEGO COUNTY.

(From our Special Correspondent.)

There is now considerable prospecting along this coast for oil, coal and bituminous shales, but thus far with only moderate success.

Samples of a very fine specular iron ore have recently been brought in from a deposit which is said to be but 40 miles distant from the city of San Diego. The hematite resembles some of the fine-grained specular ore of the Menominee range, Michigan and Wisconsin.

BLACK WARRIOR.—Captain Huntington, formerly of Deadwood, S. Dak., is about to build a stamp mill at this mine at Mesa Grande. Good reports come from the mine.

CARGO MUCHACHO.—The latest advices from this mine are to the effect that operations are going on smoothly, with the mill in operation. The Cargo Muchacho district is about 20 miles from Fort Yuma.

HELVETIA.—Work is still in progress in the long cross-cut tunnel of the Helvetia, which is being driven to cut a vein of gold quartz known to be rich. The old Helvetia works are filled with water to a depth of 200 ft

HIGH PEAK.—This mine, in the Julian district, is sending a good grade of gold rock to the Helvetia mill.

STONEWALL.—This mine is again in operation and the mill is kept busy. Responsible information concerning this property is not easily obtainable, but it is understood that the quartz now being crushed comes from the upper portion of the mine, the lower works having been abandoned. There is a great deal of unexplored territory on the Cuyamaca ranch on which the Stonewall is situated, and there is, consequently, a chance that a new bonanza may some time be found there.

SHASTA COUNTY.

CLEVELAND MINING COMPANY.—A party of capitalists have made arrangements to incorporate and work the Bullychoop mines, which, says the Shasta *Democrat*, is one of the most extensive groups of mines in northern California; litigation however, has blocked work and development for a long time. The parties interested have completed the preliminary arrangements for incorporating under the title of Cleveland Mining Company. The incorporation includes nearly every claim in Bullychoop.

(From our Special Correspondent.)

GLADSTONE.—This property consists of the Gladstone, Helena, and Giant mines. A large amount of capital has been expended in opening the mine in a systematic manner. The vein runs northeast and southwest, dipping 45° northwesterly. When a tunnel was first run and the vein cross-cut, three ledges were encountered, the first averaging 2½ ft. in width, the second 5 ft., and the third 4 ft. The veins have been opened for 1,000 ft. along their strike. Since January 9,000 tons of ore have been crushed, and 60 tons are now being crushed every 24 hours. Seventy stamps are kept going, with two Huntington mills, used to recrush tailings. The sulphurets are being saved, pending the erection of a chlorination plant, which will probably be in the near future.

SIERRA COUNTY.

EXTENSION.—New buildings are being erected at this mine. According to the Downieville *Mountain Messenger*, the outlook of the property is promising. The gravel is yielding $2.25, the expense of working being about 80 cents a cubic yard. The channel is about 300 ft. wide, as far as prospected.

SISKIYOU COUNTY.

It is reported that J. W. Walters & Son have lately discovered a ledge of asbestos on the headwaters of Beaver Creek, Siskiyou Mountain, the fiber of which is fully 18 in. in length. Discoveries of asbestos have also been made along the Oregon side of Siskiyou Mountain.

A rich quartz ledge has lately been discovered at Callahan gulch, Salmon River, near the Black Bear mine. A San Francisco syndicate which intends to erect a quartz mill has acquired the property, says the Yreka *Journal*. Other new discoveries have also been made in the Salmon River section, and at Methodist and Know Nothing creeks in the southwestern portion of this county, and at New River, just across the line in Trinity County. Some three or four new quartz mills are to be taken to Salmon River.

## COLORADO.

ACME COAL MINING COMPANY.—This company has filed amended articles of incorporation to permit it to extend operations into Las Animas, Fremont, Gunnison and Huerfano, and other counties of this State. President L. E. Andrews, of the company, has recently purchased of the Apishapa Coal and Mining Company, 2,580 acres of coal land in Las Animas County, known as the Rock Island coal lands, and lying 25 miles north of Trinidad. It is underlaid with large veins of bituminous coal, and has been thoroughly developed. The company is working to get a railroad out to the land. Mr. Andrews expects to commence producing from the land at once, hoping to increase the daily output of the mines to 2,000 tons a day within a short time.

BOULDER COUNTY.

The rich strikes reported from Pomeroy Mountain, Caribou, prove to be of little consequence, as we foretold.

CHAFFEE COUNTY.

ECLIPSE MINING COMPANY.—The management is considering the question of ways and means for driving another tunnel lower down the hill. Shipments are maintained at the usual rate.

SILENT FRIEND MINING COMPANY.—The mine was closed down recently, but work has been resumed with a force of 10 men.

CLEAR CREEK COUNTY.

ALEXANDER.—C. C. Fuller, superintendent of this mine, which is owned principally by Forsyth Bros., reports a find of good smelting ore. A force of 10 men is employed in the mine. The stamp mill recently erected is running day and night.

DOVE'S NEST.—A streak of ore assaying $1,000 per ton has been cut in the 585-ft. level.

DOLORES COUNTY.

ENTERPRISE MINING COMPANY.—The first two cars of ore shipped from the mine since the new management assumed control assayed 528 oz. per ton in silver and netted $14,000. The company is now shipping this ore at the rate of 1½ cars per day, and is making arrangements to increase its output to two cars daily. The low grade ore of the mine is being piled on the dump, awaiting the completion of the Rio Grande Southern Railway.

EAGLE COUNTY.

NOLAN CREEK MINING COMPANY.—Manager Wheeler is making arrangements to build a 10-stamp gold mill near the mouth of Nolan Creek. A 5-ft. Pelton wheel will furnish the power. Considerable attention is now being paid to prospecting the auriferous quartzite of this district.

GILPIN COUNTY.

JUSTICE MINING COMPANY.—The mine has been closed down, funds having been exhausted and it being impossible to dispose of treasury stock, at present, at a satisfactory price. The directors are considering the advisability of leasing the property.

NEW CALIFORNIA, LIMITED.—The output for July was 490 tons of ore yielding 136 oz. gold valued at £430. The expenses of production were £610; expenditure on mine development and exploration £240. The outlook in the mine is decidedly more favorable. The main drift of the 2,000 ft. level west is now in from the shaft 891 ft., and is just entering very promising ground. At present the breast shows a 2 ft. streak of low grade ore. Prospects at other points on this level are improving. According to the last report of the manager work was about to be resumed in the 2,100 ft. level, the water having subsided to that depth.

LAKE COUNTY.

MAID OF ERIN SILVER MINES, LIMITED.—The net profits for the month of July are reported as $76,000.

SMALL HOPES CONSOLIDATED MINING COMPANY.—The company has 60 men on its pay-roll, and is producing about 40 tons of ore per day.

WHITE CAP.—Shipments of lead carbonate ore averaging about 50 tons per day are being made. A force of 50 men is employed at the mine.

(From an Occasional Correspondent.)

Operations about the Leadville mines are a trifle slow just at present, owing to the unsettled condition of the ore market. The smelters both here, at Pueblo, and at Denver are well supplied with argentiferous iron ore, some carrying stocks of 8,000 to 11,000 tons of this class of mineral, and as this kind of ore is mostly extracted by lessees the depression is more severely felt than if some large mine had closed down. The market for lead carbonate ore has been a trifle better lately, but very unsettled. The contracts with the Maid of Erin Silver Mines, Limited, and several other large producers, expire in a few days, and a great deal of speculation is indulged in as to the figures upon which new contracts will be made. Anticipating the possibility of a hitch, the smelters have accumulated quite large stocks of lead ore, and are apparently prepared to stand off for some days to enforce their demands.

Prospecting work in the district continues as actively as ever, and the sinking of deep shafts to explore the contact under the city continues in quite a number of places. Much expensive prospecting work is also in progress in the more outlying sections, notably Iowa Gulch, Breece Hill, Big Evans Gulch and the country south of Long and Derry Hill.

The large daily ore output of the district is frequently a puzzle even to the best informed, and is mostly maintained by the great number of small and moderate producers. Of course a steady flow of ore comes from the Iron Silver, Minnie, Colonel Sellers, and Maid of Erin. The latter mine has produced 6,500 to 7,000 tons of ore per month for the last four months. Its statement shows receipts from ore sales for the quarter ending July 31st of $360,000, with net profits of $203,700. This mine, together with the Adams, Wolf Tone and others in the north part of Carbonate Hill are at present the largest producers.

Among the notable new strikes of the week past is that of the Mahala, which is situated a short distance east of the Maid of Erin. At a depth of about 1,000 ft. this shaft encountered an ore body, lying nearly horizontal, and for 33 ft. continued in sulphide ore of good grade.

Other new strikes are reported from the Frenchmen on the east side of Iron Hill, the Alleghany on Yankee Hill, and in the old carbonate mine, of the Leadville Consolidated Mining Company. In the latter, lessees have encountered quite extensive bodies of fine sand carbonate ore, running 125 to 340 oz. silver per ton in car load lots.

Mr. Jos. W. Watson, who located the Morning Star mine, and subsequently sold it for $1,250,000, has succeeded in raising further capital ($75,000) for the development of the Leo mine, and will begin work on the same next week. This property is situated east of the Moyer shaft of the Iron Silver Mining Company, and much is expected from this new work.

The Silver Cord and the Antioch tunnels, the one penetrating Iron Hill, and the other Breece Hill, are both advancing rapidly, and before the close of the year the ore from some of the leading mines of these sections will no longer be hoisted to the highest points only to be hauled down again, but will emerge from the mountains at the very base. At the mouth of the former tunnel a large concentrating mill is also to be erected.

The force at the Louisville mine, which was recently visited by a fire, is engaged in retimbering portions of the shaft. The damage did not exceed $10,000 and 60 days' delay.

Several of the smelters are greatly enlarging their furnaces and otherwise improving their plants.

OURAY COUNTY.

AMERICAN BELLE MINES, LIMITED.—It is expected that the Silver Bell shaft will be ready for hoisting

ore before the middle of this month. The guides for the cage are in position, but the gallows frame is not yet finished. The timbers for the ore house are framed and the ore house track completed.

CANDICE.—A 30-H. P. Lidgerwood engine and a duplex Deane station pump have been added to the equipment of this mine, which is owned by ex-Senator Wallace, of Pennsylvania. The shaft is now down 265 ft., and a contract is let for 235 ft. more. Ore is showing on every level so far opened.

GALENA LYON.—It is reported that the cross-cut which has just intersected the vein at a depth of 65 ft. has exposed 3 ft. of galena ore, which will assay $75. The mine is located at the head of Commodore gulch.

NEW GUSTON COMPANY, LIMITED.—The management of this company has suspected ore stealing from its mine for some time past. Last week Evan Lloyd, John Kenaugh and Thomas Quail, employés of the company, were arrested upon the charge. According to the *Solid Muldoon* a statement of ore sold, purporting to come from the "Jay Bird" mine, was found in Lloyd's possession. The lot weighed 811 lbs. and assayed 1.681 oz. per ton in silver, and 7·3 oz. in gold, aggregating in value, after deducting sampling and smelting charges, $674.50. The ore was sold to S. S. Badger, of the Badger mill, for $375. In addition $35 worth of ore was found in Lloyd's trunk.

SILVER LEDGE SYNDICATE, LIMITED.—Mr. Samuel Jennings, who was deputed to visit the Silver Ledge mines, Red Mountain, Colo., by the West Argentine Company, Limited, which is considering the purchase of the property, has made the following report: The property consists of the Silver Ledge, Iron Silver, Morning Star, Copper Bell, Addie S., Bluebird and Oriental claims, on Mineral Creek, about three miles from the Yankee Girl and New Guston properties, and the Lone Star claim, about three miles further down the stream. The Silverton Railway passes over the property. A shaft on the group is now sunk to a depth of 255 ft. below the tunnel level, which is 40 ft. below the floor of the shaft house. Ore assaying 146 oz. silver and $5.49 gold per ton and 17·3% copper is exposed in No. 2 level. Considerable mill ore has also been opened.

YANKEE GIRL SILVER MINES, LIMITED.—Shipments for the first half of August amounted to 250 tons of estimated value, £2,066. These comparatively small shipments were due to the fact that the timbers of the Robinson shaft and of some of the stopes in the Yankee Girl were being repaired. This work not having been completed until the end of the month, August production was considerably smaller than that of July.

PITKIN COUNTY.

CENTRAL ASPEN SILVER MINING COMPANY, LIMITED.—The first ordinary general meeting of the Central Aspen Mining Company, Limited, was held in London on the 19th inst., Mr. W. Lees presiding. The chairman remarked that most of the shareholders had been also shareholders in the Pitkin Mining and Exploration Company, and, therefore, it might be taken for granted that they were aware of the purpose for which the Aspen company was formed, viz., to develop mining property at Aspen, Colorado. The machinery had been already purchased by the Pitkin company, and a shaft had been sunk to a depth of 300 ft., at which point the existence of a lode was proved, concerning which the resident manager had sent very hopeful reports to the directors.

## FLORIDA.

ALACHUA COUNTY.

HIGH SPRINGS PHOSPHATE COMPANY.—This company has three mines open and has developed a very large quantity of high grade phosphate. The capital stock of this company, which is about $500,000, is controlled by Jacksonville parties, of whom A. W. Barrs is president, W. A. Bours, treasurer, and Capt. Theo. Willard, manager.

MARION COUNTY.

FRENCH PHOSPHATE COMPANY.—Dr. Thuiller, general manager of this company, of Paris, completed on the 17th ult. the purchase of the Peninsular Phosphate Company's property at Sparr and Anthony for $200,000, that being the amount of its capital stock. The mine has been in successful and profitable operation. Nine hundred and twenty acres of land are included in the purchase.

## IDAHO.

CUSTER COUNTY.

DICKENS-CUSTER MINING COMPANY LIMITED.—Bullion shipments during July amounted to £3,610; mining and milling expenses, £2,730.

LEMHI COUNTY.

NEW VIOLA MINING COMPANY.—The manager reports prospects at the mine to be more encouraging than at any time in the past six months. The Bore Hole shaft has been sunk a short distance through short lime, and a drift has been started from the bottom, which it is expected will prove up something of consequence. The total expenditure at the mine during July was $2,115; driving and sinking done during the month, 217 ft. The company is having some trouble at present in securing men.

OWYHEE COUNTY.

FLINT MINING COMPANY.—The mill is running on Last Chance ore and doing good work, the concentrates assaying upward of 800 oz. silver per ton. A force of 25 men is at work in the mines preparing for a large production of ore the coming year. Teams have been engaged to haul the shipping ore to Caldwell for shipment to Denver. It is reported that Mr. Leech has been offered a profit of $300,000 on his purchase, and will probably accept it.

HOWE-MANHATTAN.—It is reported that very rich ore has been struck in the shaft at a depth of 96 feet in this property located at De Lamar.

POORMAN MINES, LIMITED.—The drift recently started from Tunnel No. 3 on the Illinois Central vein has opened a large streak of good ore. The cross-cut from Tunnel No. 3 west to cut the Glenbrook vein is still in hard rock, which is supposed to be the hanging wall of the Glenbrook vein. The main drift on the Poorman vein still continues in good ore. A large amount of rich ore is now in the ore house ready for the mill. A contract has been let for hauling the ore to the mill, which started on Poorman ore on the 1st inst.

RUTH.—The three tunnels are being pushed ahead, the middle tunnel being in over 600 ft., most of the distance in good milling ore. The lower tunnel has just reached the main ore chute at about 100 ft. from the mouth of the tunnel. The upper tunnel has just passed through a dike that cut the vein entirely out for a distance of about 40 ft. The vein is now showing in the face of the tunnel.

SILVER CITY REDUCTION COMPANY, LIMITED.—This company, recently organized in London, has purchased the mill property of Mr. R. H. Leonard, at Silver City, taking possession on the 1st inst. The mill is to be put in repair and will then be run on Poorman ore. Its capacity is to be increased to 30 tons per day.

SHOSHONE COUNTY.

BUNKER HILL & SULLIVAN MINING AND CONCENTRATING COMPANY.—The miners' strike at this company's property is ended, and work has been resumed. Mutual concessions were made.

## ILLINOIS.

PERRY COUNTY.

HORN COLLIERY COMPANY.—The five-months' strike at Duquoin is practically ended. The coal miners' executive board and the company have come to terms, and a contract has been signed for a year. It is likely that other operators in the district will agree to the same terms and comply with the new mining laws.

## INDIAN TERRITORY.

CHOCTAW COAL AND RAILWAY COMPANY.—A number of the Philadelphia stockholders of this company have just returned from a trip to the Indian Territory, which was taken with a view to disposing of the question of the receivership of the corporation. It is reported that a large number of both the stockholders and creditors have expressed dissatisfaction with the management of one of the receivers, Mr. Chaddick, and the above mentioned party included a committee of the creditors empowered to petition the courts for the removal of Mr. Chaddick. A member of the party stated to the Philadelphia *Press* that the matter had been satisfactorily adjusted, and that Chaddick had been granted a year's leave of absence, during which time his duties will be performed by his co-receiver, Francis I. Gowen. The strike at the company's mines is at an end.

## MAINE.

SAGADAHOC COUNTY.

It is reported that the coal deposit at Cape Small Point, near the mouth of the Kennebec River (see ENGINEERING AND MINING JOURNAL, August 22d), is more extensive than has been supposed. Good veins of coal have been cut by the drills at depths ranging from 870 to 900 ft. and shafts will be sunk at once.

## MICHIGAN.

COPPER.

(From our Staff Correspondent.)

The Tamarack Mining Company's stamp mill contains five head of Ball stamps, having solid foundations, four of which are working on Tamarack rock and one on Kearsarge rock. Four heads are in operation in the Osceola mill, a fifth head, having a solid foundation, is about completed. After it is started each of the remaining four will be supplied in turn with a solid head. This will practically increase the mill's stamping capacity one-fifth.

TAMARACK, JR., MINING COMPANY.—No. 1 shaft cut the Calumet conglomerate lode at a depth of 2,476 ft. It was found to be 10 ft. wide and well charged with copper. Cross-cuts will be run every 60 ft. On the second level 170 ft. have been traversed toward the No. 2 shaft, with a view of eventually connecting it with No. 1. A drift to the south of the shaft in the lode showed the ground, as was expected, to be well mineralized. The management, taking for granted that the lode in this direction is similar to that in the Tamarack, is now confining its operations in exploring the north ground. Capt Daniell is of the belief that the shaft has cut the eastern edge of a rich mineralized belt—the lode dips west into the property. It may be the edge of the one great chute found in the Tamarack lode, or it may be a different run of mineralized ground. As yet the lode has been opened only in a limited way. We examined the stock pile and found it to contain rock about as rich in copper as that produced in the Tamarack. A rock house 74×54×80 ft. is being constructed. In answer to the query as to stamp-mill facilities, Capt. Daniell stated that the company would not construct a stamp mill until the lode was more thoroughly proved—it will then be the better able to determine upon just the character of a mill adapted to the mine's resources. The Kearsarge mine under the same management is without a mill, and is said to be making much promise. It is probable that it may combine with the Tamarack, Jr., in the construction of a mill. This will not be before spring, however. In the meantime about 150 tons of rock are to be mined and hoisted daily. This will be treated, probably, in the Osceola stamp mill, and will afford sufficient revenue to continue development operations. No. 2 shaft is 2,500 ft. deep, and it is calculated it will reach the lode at a depth of 3,000 ft.

Each shaft is equipped with a hoisting plant consisting of a duplex Reynolds-Corliss engine, with 20 × 60 in. cylinders.

TAMARACK MINING COMPANY.—This company's annual report makes a most creditable showing. Summarized it is as follows:

| | | |
|---|---|---|
| Production of mineral, pounds | | 18,776,153 |
| Per cent. fine copper | | 74.97 |
| Production fine copper pounds | | 14,076,9 7 |
| Average price received, about | | 14.08 cts. |
| Receipts from copper | | $1,971,919 28 |
| Interest receipts | | 36,857.64 |
| Total gross receipts | | $2,008,776.92 |
| Costs— | | |
| Running expenses at mine | $728,115.88 | |
| Smelting, transportation | 213,921.24 | |
| | | 942,037.12 |
| Mining profit | | $1,066 739.80 |
| Dividends paid, $15 per share | | 750,000.00 |
| Year's surplus | | $316,739.80 |
| Received from sale of 10,000 shares treasury stock for sinking two shafts on section 11 (Nos. 3 and 4), timber lands, additions to plant, etc | $1,000,000.00 | |
| Expended for these purposes Jan. 1, 1889 to June 30, 1890, $450,313.03, and for the year ended June 30, 1891, $340,430.71, total | 790,743 74 | |
| Balance available | $209 256.26 | |
| Balance assets, exclusive of above, June 30, 1890 | 498,059.50 | |
| | | 707,3 5.76 |
| Making balance of assets, June 20, 1891 | | $1 024 055.56 |

The balance sheet of June 30, 1891, was as follows:

ASSETS.

| | |
|---|---|
| Cash on hand at mine | $1,495.18 |
| Bills receivable at Boston and Hancock & Calumet Railroad Company's bonds | 284,540.59 |
| 250 shares Hancock & Calumet Railroad stock | 25,000 00 |
| Accounts receivable at mine | 37,377.16 |
| Accounts receivable at Boston | 53,614 81 |
| Supplies at mine | 69,5 6.14 |
| Wood and timber land | 151,462.48 |
| Copper on hand and cash in bank at Boston | 6 1,095 72 |
| Total cash assets | $1,224,122 18 |

LIABILITIES.

| | | |
|---|---|---|
| Unpaid dividends | $355.00 | |
| Drafts | 23,536.05 | |
| Accounts payable at mine | 90,675.57 | |
| Accounts payable at Boston | 85,500.00 | |
| Total liabilities | | 200,066.62 |
| Balance of assets July 1, 1891 | | $1,024,055.56 |
| Rock stamped | | 282,287 tons. |
| Product of mineral | | 18,776.153 lbs. |
| Product of refined copper | | 14,076,957 lbs. |
| Yield of refined copper per cubic fathom of ground broken | | 840 lbs. |
| Yield of refined copper per ton of stamped rock | | 49 74 lbs. |
| Yield of mineral per cubic fathom of ground broken | | 1,121 lbs. |
| Percentage of mineral in stamp rock | | 3.32% |
| Percentage of refined copper in stamp rock | | 2.49% |
| Refined copper, cost per pound at mine | | 5.17 cts. |
| Cost of smelting, freight, and all other expenses of handling copper | | 1.52 cts. |
| Cost per pound for the year for construction | | 2.42 cts. |
| Total cost per pound | | 9.11 cts. |

The amount of rock handled including that broken in drifts, cross-cuts, etc., was 330,339 tons; of this amount 301,523 tons were from the conglomerate workings, equivalent to 16,751 cubic fathoms. The cost of treating stamp rock was $2.57 per ton; figuring on all rock broken the cost was $2.20 per ton. The total amount of development work done, in linear feet, was as follows: Shafts, 161.0 ft.; winzes, 685.3 ft.; levels, 3,466.8 ft.; cross cuts, 1,997.6 ft; total, 6,310.7 ft. The directors figure that the cost of sinking Nos. 3 and 4 shafts for the ensuing year will be $125,000, and that with copper at 12c. they can maintain the present rate of dividends and pay all construction expenses without drawing on the surplus.

An electric plant is now being installed at Nos. 3 and 4 shafts. It consists of a 50,000 watt Edison generator and a Reynolds-Corliss engine, 22 in. ×

26 in. It is to be employed in pumping water from Nos. 3 and 4 shafts. The current will be applied to motors located in No. 4 shaft as follows: 77, 157, 403, 670 and 1,000 ft. from the surface, and in No. 3 at 317, 462, 665, 800 and 1,400 ft. from the surface. It is calculated that about 30 H. P. will be employed in each shaft. The efficiency of the plant is guaranteed to be between 80% and 85%. This plant will be in operation on December 1st, 1891. The Edison Company has an agreement with the Mining Company whereby it is to be supplied with power for experimenting with electric rock drills with a view to their introduction in the mine. At the present time No. 3 shaft is 1,300 ft. deep, and is sinking at the rate of from 80 to 90 ft. per month. It will traverse 4,250 ft. before reaching the lode. No. 4 shaft is 1,100 feet deep and will reach the lode at a depth of 4,480 feet. Each shaft is equipped with a duplex Reynolds-Corliss engine, 24 in. × 60 in., boiler plant, compresses, etc. In the old mine No. 1 shaft is nearly 3,000 ft. deep, being opened to the 14th level; No. 2 shaft is 3,070 ft. deep, the 15th level being nearly completed.

The Osceola amygdaloid, which was first encountered by a crosscut run east from the 12th level of No. 1 shaft, was cut by the shaft at the 13th level and by a crosscut west from the 14th level. In these openings the lode is as well mineralized as at any point in the Osceola mine where it is being worked. Up to the present time it has been inconvenient to work this deposit owing to its proximity to the shaft. Now that the workings are being extended lower, the management intends to soon open up and mine the rock.

WOLVERINE MINING COMPANY.—This company, which has been operating 40 acres of land south of and adjoining the Kearsarge for about a year, is about to enter the list of producers. The openings of the mine consist of three shafts. No. 3, which is nearest the Kearsarge property, is 400 ft. deep and has been discontinued, having approached the Kearsarge boundary line. No. 2 shaft is sinking to the 6th level. No. 3 shaft, which was started about a month ago, is 90 feet deep and is sinking. From No. 2 the 2d, 3d, 4th and 5th levels are being driven south and the 5th level north. Between the 1st and 2d levels the ground is worked away. The lode is an amygdaloid and is very bunchy. It shows best south of Nos. 2 and 3 shafts. The management looks for about the same results as are attained in the Kearsarge, viz., 1½ per cent. of copper. The mine is equipped with a compressor plant having a capacity of from 10 to 12 drills. Since the start 2,500 ft. of drifts have been opened. The stamp mill is equipped with one head of Ball stamps, 18-in. cylinder, capacity from 175 to 200 tons per day. It is ready for a start, and will be placed in permanent operation as soon as the water supply will warrant.

#### IRON—MENOMINEE RANGE.

(From our Staff Correspondent.)

HAMILTON ORE COMPANY.—Mr. F. N. Bosson, who is now the electrician of the Calumet & Hecla Mining Company, recently installed an electrical pumping plant at this company's mine. The pump, which is located 1,325 ft. below the collar of the shaft, has a capacity of 100 gallons per minute. The pump has a Knowles' water end, and is tested to 1,000 lbs. per square inch. The generating plant is located in the Iron Mountain electric light station. It consists of a Thomson Houston 500 volt dynamo, developing 80 H. P. The efficiency of the plant is guaranteed to be 77%.

### MINNESOTA.

#### IRON—MESABI RANGE.

MOUNTAIN IRON COMPANY.—On the 3d inst., at St. Paul, a suit was filed by this company involving over $2,000,000 worth of iron land north of Duluth, against Robert W. Jameson, lately county attorney of Minneapolis. State Auditor Bierman is also involved. The company alleges that up to January 26th, 1888, the State of Minnesota was the owner of all those lands situated in St. Louis County known as the Mesabi Iron Range Land, and that on November 25th, 1889, the firm of Merritt, Chase & Merritt, of Duluth, applied to State Auditor Braden, under the mineral land lease law of 1889, for a lease of 1,520 acres of the range lands. Mark D. Flower at the same time applied for a lease of 200 acres, C. C. Merritt for 120 acres, and K. D. Chase for 120 acres. At the time these applications were made State Auditor Braden refused to give the applicants certificates, on the ground that the land had not been patented to the State, but the auditor promised them that the applications would be considered as first applications on the land applied for. On March 21st, 1890, Mr. Braden issued the certificates of lease, and the applicants at once transferred the latter to the Mountain Range Company, and on July 21st, 1890, the latter transferred the leases to the Mountain Iron Company, the latter paying a large sum for them. On April 21st of this year the company applied to Auditor Bierman for a renewal of the lease. Mr. Bierman recognized its rights and gave it a separate lease, but on April 25th Mr. Jameson asked the auditor to reject the Mountain Iron Company's application and give him the leases on the mineral tracts. Mr. Bierman complied with the request. The iron company asserts its sole right to the mineral lands, and says that it has expended over $5,000 in making arrangements to unearth the ore. It asks the court that it be adjudged the sole owner of the leases, and that Jameson, as a holder in trust for the company, be compelled to transfer them all to the company at once.

### MISSOURI.

#### JASPER COUNTY.

(From Our Special Correspondent.)

JOPLIN, Aug. 31.

The lead and zinc mines of the district made a heavy output during the week past, but the sales of ore were rather light owing to a decline in the ore market. Zinc ore ruled at $22.50 per ton, although some fine, clean grades sold at Zincite for $23.50 and $24 per ton. Many large operators are still holding their output for an advance in price, which they feel sure must come. Lead ore sold at $25.25 per thousand, with heavy sales from the Joplin and Galena mines.

Following are the sales from the different camps as far as reported:

Joplin mines, 1,435,020 pounds zinc ore and 206,860 lead; value, $21,366.75.

Webb City mines, 691,440 pounds zinc ore and 49,460 lead; value, $7,926.35.

Carterville mines, 1,797,180 pounds zinc ore and 60,320 lead; value, $22,078.25.

Zincite mines, 306,820 pounds zinc ore and 2,300 lead; value, $3,654.

Lehigh mines, 44,170 lbs. zinc ore; value, $528.

Oronogo mines, 357,140 lbs. zinc ore and 114,010 lead; value, $6,218.55.

Galena, Kan., mines, 1,125,000 lbs. zinc ore and 208,040 lead; value, $17,857.

District, total value, $79,628.90.

Pittsburg, Kan., spelter output: R. Lanyon & Co., 189,800 lbs.; S. H. Lanyon & Bro., 96,750 lbs.; W. & J. Lanyon, 96,800 lbs.; Granby, M. & Co., 96,950 lbs.; Wier City Zinc Co., 188,650 lbs.; Pittsburg & St. Louis Zinc Co., 95,850 lbs. Total, 764,800 lbs. Coal output for same week, 11,500 tons.

The mines of the entire district were never in a more prosperous condition and the outlook for the fall work is certainly very encouraging notwithstanding the fact that the average price paid for ore does not exceed $23 per ton; almost every operator feels confident, however, that the price will advance to not less than $25.

ENTERPRISE MINING COMPANY.—This company, operating on the Windsor Mining Company's land, in the eastern part of the city, has been a steady producer for the past two years, but recently stopped work on its ore bodies and commenced opening up new ground, which, from present indications, promises to show a new ore body. The prospecting is being done in open ground, following a seam of tallow clay, in which large chunks of ore are now found.

MYRTLE.—This mine, formerly known as the Little Josie, on the Windsor land, has been doing dead work for some time, and is now opening up a fine face of ore.

OSWEGO MINING COMPANY.—Messrs. Barbee & Glover, operating on this company's land, have opened up a wonderful deposit of free ore, and last week, with three men in the ground, two men washing with a hand jig and a horse whim, cleaned up and turned in 63,890 lbs. zinc ore and 1,670 lbs. lead, and have on hand not less than 10 tons of crushed rock.

#### NEWTON COUNTY.

(From our Special Correspondent.)

Quite an amount of prospecting is being done at different places around Seneca, and some ore is being opened. The Seneca tripoli mines have just been sold to Eastern parties for $15,000. The American tripoli mines are running on full time and producing a large amount of polish and water filters. These are certainly wonderful deposits of tripoli; they are easily mined, lying just under the surface soil.

### MONTANA.

BOSTON & MONTANA CONSOLIDATED COPPER AND SILVER MINING COMPANY.—The hoist and engine at the Leonard shaft have been completed and the mine is now in operation. This is one of the largest shafts in Butte, being 18 ft. 6 in. × 6 ft. 6 in. outside measurement. It is a three-compartment shaft, having two working compartments each 4½ × 4 ft. in dimension, and a pumping compartment 4¼ × 7. The shaft is now down 500 ft., and the company intends to continue sinking. The shaft is situated on the Piccolo claim, adjoining the Colusa. The smelters of the company have been running steadily.

#### DEER LODGE COUNTY.

GRANITE MOUNTAIN MINING COMPANY.—Improvements in the way of new buildings and heavier machinery are constantly being added to the extensive plant of this company. It has recently ordered a new hoist from Webster, Camp & Lane, of Akron, Ohio. It is to be flat cable, double reel, and the cylinders are to be 28×72. Work on the foundation for this hoist will be commenced shortly. The setting of the new machinery will not interfere with the working of the hoist now in use, except for the short time it will take to shift the cables. The old plant consists of double reels and 26×60 cylinders, and has done satisfactory work, but it is not heavy enough to meet the demands of the 180 stamps soon to be dropping on Granite ore.

MIDNIGHT MINING AND MILLING COMPANY.—This company was recently organized with the following officers to take over the Midnight mine: President, F. M. Durfee; vice-president, T. F. Heines; secretary, Valentine Jackey; treasurer, A. R. Dearborn; G. H. Babcock, general manager. About 30 men are now employed working the mine. The shaft is now down about 140 ft. from the surface, says the Phillipsburg *Mail*, and another crosscut south to the lead will be run at 150 ft. There is a level from the shaft, at a depth of 30 ft., where vein matter and a portion of the ore body was found in the shaft. At this point there is a drift in about 30 ft. west, in the face of which there is a breast of good ore about 3 ft. in width. A stope has been started at this point, and some good ore is being taken out. At the 50-ft. level a crosscut was run 14 ft. south to catch the vein on its dip to the south, and an ore streak about 4 ft. in width was encountered. The quality of the ore is much the same as at the 30-ft. level, but it is more compact and less sorting is required. At 100 ft. a crosscut was run 24 ft. from the shaft south to the ore body, and the drift east is in about 70 ft. from the crosscut. The face of the drift also shows quartz, but it does not appear to be of as good a quality. This drift will be run to make connection with the shaft on the Creek, a claim recently bonded by the company. The west drift from the 100-ft. crosscut follows the ore, which runs almost due west for 30 ft., and then gradually veers to a northwesterly direction, and the face is now 125 ft. from the crosscut and shows more than 4 ft. in width of solid quartz, assaying well. The Creek claim, recently bonded by the company, has a shaft 60 ft. deep. This shaft is 155 ft. east of the Midnight shaft. The shaft was started almost on top of the ore, but the latter has gradually dipped southward. Levels have been run both east and west from this shaft, 30 ft. from the surface. Both are in ore, and the vein is about 4 ft. in width, but is much more broken up, and the ore is not so uniform either in grade, width or dip as in the 100-ft. level in the Midnight. The country rock is lime, but the footwall of the vein is sandstone and the hanging wall is porphyry. The company is shipping ore daily to the Lexington works in Butte.

#### JEFFERSON COUNTY.

ELKHORN MINING COMPANY, LIMITED.—The company has let a contract to Walter C. King, of Helena, to cut and deliver upwards of 30,000 cords of wood. The fulfillment of this contract will require the employment of 200 men and 100 teams.

#### MEAGHER COUNTY.

NEIHART-PARROTT.—An important strike is said to have been made in this mine, which adjoins the town site of Neihart. While starting a tunnel into the mountain side to cross-cut the vein, a 2-ft. lead of high grade ore was unexpectedly encountered almost at the grass roots. This property is owned almost exclusively by Great Falls parties.

SIR HENRY CURTIS.—At the depth of 80 ft. a solid pay streak of galena and lead carbonate 18 in. in width has been struck in this mine in the Four Mile District, near Sulphur Springs. The lead is in a lime-porphyry contact.

#### SILVER BOW COUNTY.

BUTTE & BOSTON MINING COMPANY.—This company continues to make improvements at its properties. Two new Allen's improved O'Hara furnaces are building, which will increase the calcining capacity of the company about 25%, and make the monthly production about 2,000,000 lbs. The new hoisting engine at the East Gray Rock has been completed and started up on the 24th ult. This is one of the largest engines in the camp and is capable of sinking the shaft to the depth of 2,000 ft. The copper ores to run the smelters of this company are at present coming from the Silver Bow, the East Gray Rock and the Ground Squirrel. At the Silver Bow shaft No. 1 sinking has begun from the 600 to the 700 ft. level, while Silver Bow No. 2 is resting at the 800. The East Gray Rock is at the 700 ft. level, but will start downward with the operation of the new engine. Nothing is being done at the West Gray Rock, which is 600 ft. in depth. The silver mill is being operated chiefly on Belle of Butte ore.

### NEVADA.

The flow of water in the Carson River is slowly increasing, as the ranchers above the mills who have diverted it for irrigation purposes have finished their work, and it is expected that all the mills run by water power will be crushing ore, as usual, early in September.

#### DOUGLAS COUNTY.

MONARCH CONSOLIDATED GOLD AND SILVER MINING COMPANY.—Articles of incorporation have been filed at Carson by this company. Location of mine, Silver Lake mining district (Pine Nut). Capital stock, $1,000,000, divided into 100,000 shares; main office, Carson City. Trustees for the first six months—T. R. Hofer, A. M. Ardery, William Woodburn, James A. Haycraft, and J. R. Judge.

PINE NUT CONSOLIDATED GOLD AND SILVER MINING COMPANY.—This company has been organized by Oliver Roberts, of Carson, Hebe Holman, of Virginia, A. Burnaby, of San Francisco, and Charles Colburn, of Carson, to take over property in the Pine Nut district. Its shares are to be listed on the San Francisco Stock Exchange. The locations taken in by the company are the Mascot, the Mountain View and Valley View. Commenting on this the Virginia *Chron*

*icle* says: "As the new district has developed nothing of value, at least, there is no tangible proof of the fact, the above mentioned movement would seem rather premature. Since the time of the purported rich discovery made by Zirn some months ago, the district has been overrun and honeycombed by enthusiastic prospectors for precious metals. But they have failed to find color in any of the claims outside of Zirn's. The latter exhibits gold and silver quartz specimens, which he claims were taken from the mine he has bulkheaded and shielded from view. In fact, no one knows what is back of the mysterious bulkhead but Zirn himself. Hundreds of capable miners since the Zirn discovery have diligently prospected the surrounding hills, but not one, not interested with Zirn, has exposed anything of value."

EUREKA COUNTY.

CORTEZ MINES, LIMITED.—During July 575 tons of ore were crushed, yielding 31,432 oz. silver. The mining and milling expenses for the month were $13,530. Expenditure on development work amounted to $9,507.

LANDER COUNTY.

PITTSBURG CONSOLIDATED GOLD MINING COMPANY, LIMITED.—The company is experiencing difficulty from scarcity of water. Two mills are running at present.

STOREY COUNTY—COMSTOCK LODE.

Two large air compressors, says the Virginia *Enterprise*, are being put up to furnish power to the Dow pumps in the Crown Point incline—one at the Yellow Jacket shaft and the other at the Crown Point—and both will be ready to work shortly. This will give six large compressors, and it is calculated that they will afford sufficient power to run the Dow pumps to the 2,000 level if necessary, though as soon as connection is made with the Belcher on the 1,700 level it is proposed to run a powerful stationary pump on that level by steam. This cannot be done now, as the level is entirely too hot. The work of cutting out a station on the 1,700 level for the reception of a station pump is nearing completion. An excavation has also to be made for a tank into which the sinking pumps will discharge and from which the stationary will take its water. It is expected that the station pump will be started in 30 days.

(From our Special Correspondent.)

SAN FRANCISCO, August 27.

The following is the statement of Comstock ore extracted and milled during the week:

| Mine. | Tons extracted. | Tons milled. | Assay Value. Aug. 22. | Aug 15. |
|---|---|---|---|---|
| Con Cal. & Va ... | 1,035 | 1,380 | $21.67 | $25.15 |
| Chollar..... | 516 | 516 | 19 91 | 24.71 |
| Overman..... | 635 | 594 | D13.56 | 13.11 |
| Occidental.. ..... | 302 | 302 | 18.10 | 18.56 |
| Savage..... | A164 | 355 | 18.84 | 18.52 |
| Yellow Jacket..... | .... | B700 | ..... | .... |
| | | C175 | ..... | .... |

A Cars of ore. B Approximate gold-bearing rock. C Approximate silver-bearing rock. D Car sample, $17.71

CONSOLIDATED CALIFORNIA & VIRGINIA MINING COMPANY.—The total bullion shipments during the current month, so far, have been $67,556.50. The connection on the 1,100 level by the south lateral drift, which was carried from the shaft into ore at the top of the raise from the 1,300 level, has now connected with the north lateral drift from the Best & Belcher. By this means ventilation is secured for prospecting the level by cross-cuts from the shaft to the south line. The formation to be followed upward from the 1,100 level leads to the ore found in the central tunnel. The Rowe ore strike of many years ago is a continuation of the same formation. The Virginia *Enterprise*, commenting on this fact, says the Rowe strike was made on the surface, and consequently an immense block of mineral country is still open for prospecting work. There is a block of ground, from the 1,200 level to the surface, 1,510 ft. wide, thus giving a run of about 2,000 ft. on the inclination of the vein.

KENTUCK CONSOLIDATED MINING COMPANY.—The west cross-cut from the 950 level raise has been carried 26 ft. to what is thought to be the foot wall. The streak of ore south from the raise above the north cross-cut, 1,000 level, is still being followed. The streak varies in width from 6 to 30 inches.

NEW MEXICO.

BERNALLILO COUNTY.

AZTEC COAL COMPANY.—The miners of this company, 500 in number, have been out on a strike for two months and five of the collieries have been closed down. The company has imported men from Missouri and Kansas, and some of the strikers have returned to work. Those remaining out are beginning to suffer from want of money, and it is thought that the strike will be entirely broken within a week. The strike originated through the refusal of the company to dismiss John James, superintendent of the mines, which the miners demanded.

TAOS COUNTY.

Important discoveries of gold and silver are reported in this county, in the northern part of this Territory. At San Cristoval Creek, 16 miles north of Taos. Sergeant & Craig it is reported, have struck a vein 7 ft. wide, from which some very rich gold ore has been taken. Thirty miles north of Taos, on the Red River and Cabresto Creek, a number of claims have been located by Colorado prospectors. The ore found there is an argentiferous galena, and runs from 60 to 250 oz. in silver per ton. Although mineral has been known to exist in Taos County for many years and mines have been worked there in a small way by the Mexicans, the output of the county has been insignificant, and has never attracted the attention of outside miners until very recently. These recent discoveries are near the Colorado line and Colorado capitalists and prospectors are chiefly interested.

NEW YORK.

CHEMUNG COUNTY.

Natural gas has been struck in Wellsburg, six miles from Elmira, on land of C. E. Van Buskirk, at a depth of 237 ft. The pressure at the mouth of the well is said to be 200 lbs. A company of Wellsburg men with C. E. Van Buskirk, A. G. Hillman, A. C. Wright and S. D. Herman, directors, has been organized to further exploit the field.

OSWEGO COUNTY.

Natural gas was struck at Sandy Creek on the 28th ult. at a depth of 102 ft. There are now nine live wells in the district, but the latest is by far the biggest.

PENNSYLVANIA.

COAL.

A fall of roof occurred in the Short Mountain colliery near Harrisburg last week. One miner was killed.

The Cayuga mine, at Scranton, has ceased operations indefinitely. The Brisbin is not making half-time and the Slope is doing little better.

The Lackawanna region miners held a largely attended convention at Olyphant on the 29th ult., every colliery in the district being represented. It was decided that all mining companies within the territory between Forest City and Pittston should be asked to signify at once their conformity with the two weeks pay law.

The Schuylkill Coal Exchange has issued a report dated Pottsville, September 1st, which shows that the collieries drawn to return prices of coal sold in August, 1891, to determine the rate of wages to be paid, make returns as follows: P. & R. C. & I. Company, Monitor colliery, $2.22[8]; P. & R. C. & I. Company, Knickerbocker colliery, $2.26[8]; P. & R. C. & I. Company, Merriam colliery, $2.23[2]; P. & R. C. & I. Company, Gilberton colliery, $2.30[1]; P. & R. C. & I Company, Alaska colliery, $2.22[4]. The average of these rates is $2.24[9]. The rate of wages to be paid for work done during the last two weeks of August and the first two weeks of September, 1891, is eight (8) per cent. below $2.50 basis.

The annual report of John M. Lewis, mine inspector of the Hazleton district for 1890, has been published. The total number of fatal accidents was 52, making 24 widows and 52 orphans. The number of non-fatal accidents was 134, being an increase of 6 fatal and 8 non-fatal accidents. There were mined during the year 5,777,669 tons of coal, the largest amount ever mined in the district, being an increase over 1889 of 121,503 tons. To every fatal accident there was mined 111,000 tons, there being one accident for every 31,053 tons mined.

ARCHER VEIN.—This colliery at Wadesville, which was flooded recently by storms, is being pumped out and work will be resumed next week. It has been found necessary to put in a new 8-in. column pipe in addition to the 2 and 3 in. pipes which were installed at the beginning of last week.

LEHIGH VALLEY COAL COMPANY.—This company has purchased a tract of 13 acres from the Charles Baber estate near its York Farm colliery.

LEHIGH AND WILKESBARRE COAL COMPANY.—On the 29th ult. this company signified its willingness to comply with the two weeks' payment law.

GIRARD.—An explosion of gas occurred at this colliery at Ashland on the 28th ult. Two men were badly injured. The men were in the face of the breast and in the act of igniting a fuse when the explosion took place.

UTAH.

SALT LAKE COUNTY.

In Supreme Court Chambers, New York, Justice Patterson on the 28th ult. handed down a decision denying the motion of James E. Lyon, to strike out parts (alleging blackmail) of the answer of Senator William M. Stewart to the complaint of Mr. Lyon in his suit against the Senator to recover $1,000,000 damages. This suit is based upon the allegation that Senator Stewart while acting as counsel for Mr. Lyon proved false to his interests and made a "deal" with Lyon's opponent in the action in which Senator Stewart was engaged to look after Mr. Lyon's side of the fight. These allegations are all declared to be false by Senator Stewart, and in his answer to the suit he alleges that it is all a blackmailing scheme. The story of Lyon, as told in his complaint, is a long one. He says that in 1870 he opened a silver mine called the Monitor and St. Louis lode, near Salt Lake City. The Emma mine which gave rise to such a scandal a short time later, adjoined his. He soon found that the people who were operating the Emma were infringing on the territory covered by his claims, and he made ineffectual protests. When the Emma people applied to the Government for a patent on their property he opposed the granting of the patent. Trenor W. Park, of Vermont, and Henry H. Baxter, owned a half-interest in the Emma mine, and against them and the other owners Lyon began an ejectment suit. He also sued to recover for ore that he alleged had been taken by them from his mine. It was at this time that Lyon retained Senator Stewart. The latter was then the law partner of C. J. Hillyer, of San Francisco. According to an agreement made he was to have one-quarter of all that was recovered in the action against the Emma. The case was referred to B. R. Curtis, of Boston. Lyon says that soon after the case was referred, Senator Stewart began to dicker with Mr. Park. Before long, Lyon alleges, Senator Stewart told him that the owners of the Emma would give him $500,000 for his mine and loss provided that he would withdraw his protest against a patent being issued for the Emma. To this proposition Lyon agreed, but before the agreement had been carried out, he telegraphed from Nevada to Senator Stewart not to carry out the agreement until he was further instructed. The Senator, however, paid no attention to this instruction, and on August 18th, 1871, the agreement was carried out. Lyon says, however, that he did not get the money that it was agreed he was to have for selling out and dropping his opposition. The reason that Senator Stewart gave for advising him to drop the case and settle, he says, was that Mr. Curtis was so busy over the Alabama claims matters that he would be unable for some time to pay any attention to the Lyon suit. This, he says, he has found to be false. Not long after the suit was dropped he says it was proposed to him that instead of taking the $500,000 a company be formed in London, and the stock of the Emma, Monitor and St. Louis be placed on the market. He consented to this proposition and Senator Stewart went to London and incorporated the company with a capital of $5,000,000. Lyon went to London and found that Messrs. Park and Stewart were living at the same place and seemed to be very friendly. Senator Stewart, he says, seemed to be much discouraged about the new company and said that its expenses had been very heavy and little had been done. The expense of floating the company was over $1,000,000, including $500,000 to Grant & Co., of 18 Broad street, New York, for selling stock, and $50,000 to Professor Silliman of Yale. Finally Lyon thought that it would be a good thing for him to get out, and he sold his interest for $200,000, giving Messrs. Stewart and Hillyer $50,000. Lyon now declares that Messrs. Stewart and Park sold the stock that they acquired for $6,500,000, and that Stewart got $1,000,000 out of it. He also says that the Senator got another million out of the Monitor and St. Louis and he says that he has learned that Mr. Stewart had a private agreement with Mr. Park when the suit brought in over the alleged trespassing on the Monitor and St. Louis was dropped. Mrs. Stewart, he also says, was paid $100,000 by Mr. Park at one time and $25,000 at another. He closes by charging that Messrs. Park, Stewart, and Baxter conspired to cheat him out of his rights. The facts that he alleges he says, he found out in 1876-7, when the House of Representatives appointed a committee to inquire into the relations of Robert C. Schenck, who was then Minister to England, with the Emma scandal. In addition to asking that he be paid $1,000,000, Lyon asks for an accounting as to the sale of the Emma stock, and to have the contract of Aug. 18, 1871, canceled. He also wants the release that he signed in favor of Messrs. Stewart and Park in London set aside.

Senator Stewart admits in his answer that he was liberally paid by Mr. Park for legal services, but denies that he was in any way false to the interests of Mr. Lyon while acting as his counsel. He says that in London Mr. Lyon threatened to sue Mr. Park and himself, and he (Stewart) said: "What is your price?" Lyon, he says, replied, "$50,000." This sum was paid through Mr. Park, and it was then, so Senator Stewart alleges, that the release that Lyon asks to have canceled was given. Senator Stewart denies the allegations as to Mrs. Stewart having been paid money by Park.

SUMMIT COUNTY.

ALLIANCE MINING COMPANY.—Two streaks of first-class ore, each 1 ft. wide, have been struck in the breast of the tunnel.

GLENCOE MINING COMPANY.—The dressing works were closed down last week for lack of water. The mill was doing quite satisfactory work, producing concentrates assaying from 45% to 50% lead, and 18 oz. to 23 oz. silver per ton. The mine is reported to be looking well.

MAYFLOWER.—The lessees are working a force of 75 men and are taking out a daily average of 50 tons of ore.

METROPOLITAN STONE COMPANY.—A spur track is to be constructed to the quarry, and the company will then be able to get its stone to market. A contract for 200 cars of stone has just been secured from the Union Pacific Railway Company. Mr. J. E. Bamberger of Salt Lake is president of this company.

WASHINGTON COUNTY.

DIXIE MINING COMPANY.—Another good body of ore, assaying from 25% to 46% copper, is said to have been discovered in the mine. The company is making a small output of very rich copper ore, shipping a lot occasionally.

## WASHINGTON.

### STEVENS COUNTY.

(From our Special Correspondent.)

Since the discovery of the Old Dominion, Dead Medicine, Bonanza and Silver Crown mines in 1883-84 and '85 with all the consequent rush and bustle, the Colville region has never enjoyed a period of prosperity in the mining line equal to that of the present. A number of the more developed properties are shipping ore, and all the work throughout the region is of a substantial nature. Good mining properties are in demand. Buyers and experts are busy on every hand, representing capital from Colorado, Montana and California. A number of Montana mining men en route to Kootenai, B. C., stopped here to examine properties, and as a result have gone no farther; being satisfied with the outlook they have taken hold here, and are preparing to develop and ship ore. The "mossback" element, so long a persistent drawback to the region, is being crowded out by the influx of enterprising Easterners, who are no way in sympathy with the "squaw man." New roads are being opened through passes long considered impassable, and the heavy rumble of the ore wagon now takes the place of the loose rattle of the rancher's "tater" laden, rope-bound rig. Ore buyers from British Columbia are soliciting consignment of ore from this region, via the Columbia River (from Little Dalles) to Revelstoke, and the competition between them and the west coast smelters at Tacoma and Portland is close. Among the ore shippers are the Dead Medicine and Bonanza mines in the Bruce Creek region. From the Dead Medicine the ore averages 100 oz. in silver per ton and 20% lead. From the Bonanza 12 oz. to 14 ozs. silver and 60% lead. The Daisy in the Harver Creek region yields 20 oz. silver and a high per cent of lead. The Old Dominion ore is as rich as ever, running well into the hundreds in silver and high in lead. Poverty Gulch, a new camp on the east side of the Columbia River, six miles below Kettle Falls, is attracting some attention. No depth has as yet been attained on any of the properties, but the surface indications show strong, heavy croppings of fair assay in gold, silver and lead. A new company organized in Kettle Falls, under the the style of the Kettle Falls Mining and Development Company, operated in the new camp, in a small way for a time, but has since withdrawn. In the Clugston Creek region there are a number of good silver lead properties awaiting development on which are shown good bodies of ore giving assays of 150 oz. silver and from 20% to 60% lead. Although these occur in a lime formation and show no defined ledges, the deposits are large and apparently continuous, and would justify some expenditure, as their occurrence is most favorable. Metalline on the Pen d'Oreille River, with its rich lead-silver properties, is still lying idle for want of a road through the Pen d'Oreille River canon to give it connection with the Northern Pacific Railroad at Sand Point, Idaho. Washington is to have a geological survey under the supervision of the general government. The work is to begin at once under the direction of Mr. A. H. Thompson, and the results will be beneficial in developing the mineral resources. The Geological Survey organized by the State, with Mr. G. A. Bethune, State Geologist, at its head, and set in motion this spring, has been accused by the "off" political party of being a scheme to locate mineral claims, and on the strength of said accusation has been abandoned.

# FOREIGN MINING NEWS.

## AUSTRALIA.

### QUEENSLAND.

MOUNT MORGAN GOLD MINING COMPANY, LTD.—The report of the directors presented at the half. yearly meeting of the shareholders, July 2d, shows that the value of gold won was £362,459 5s. 1d.; that expenses had amounted to £111,121 6s. 7d.; that £241,666 13s 4d had been paid in dividends, and £18,750 as dividend duty, while there was carried forward the sum of £10,259. The general manager's report states: During the year ending May 31st, 1891, we have treated 74,741 tons of stone. Our return of gold for the six months ending November 30th, 1890, was 113.251 oz. 19 dwt.; for the second half-year ending May 31st, 1891, 88,330 oz. 9 dwt.; total, 201.582 oz. 8 dwt.; average for the year 2 oz. 13 dwt. 20½ gr. per ton. You will see there is a gradual falling off in our output of gold. This is caused not altogether from the poverty of the stone, but by the change of country. It is very strange that on the western side of our workings there is a large kaolin dyke that carries no gold, and apparently cuts off all the gold, but to the east we have thousands of tons of kaolin rich in gold—*i. e.*, from ½ oz. to 22 oz. to the ton. Two trucks of quartz make a ton, but it takes three trucks of kaolin to weigh a ton, so instead of getting one ton into our furnaces we get from 13 to 15 cwt. each charge; and this in roasting loses 25 per cent. of its weight by evaporation of the water carried by this peculiar ore. So for some time, unless we strike a patch of rich sinter quartz or ironstone, I cannot promise the shareholders more than 6d per month.

"During the last twelve months we have extended the Grasstree tunnel from 200 ft. to 692½ ft.; driven a crosscut south 120 ft., and north 6 ft. The Sunbeam tunnel is extended from 901 ft. to 1,108 ft.; Crown shaft from 51½ ft. to 195 ft.; Sugarloaf shaft sunk from 130 ft. to 257 ft. In all these explorations we have discovered no payable stone except one belt 10 ft. wide in Grasstree tunnel. We have put in two new tunnels, No. 5A, with 30 ft. of payable stone, and the Hopper tunnel carrying 40 ft. of payable stone; also a crosscut in Hopper tunnel, going about north under the Lady Musgrave workings, 71 ft. giving by fire assay from 15 dwt. to 4 oz. per ton. The rich patch of gold around the Crown shaft is nearly exhausted, but the Lady Musgrave face still continues good, and has exceeded our expectations. There is a splendid body of ore, nearly all ironstone, still to work in the Lady Musgrave, and this stone must continue down for 174 ft. for certain—*i. e.*, if there is any certainty in mining. We have found it in a crosscut from No. 5 tunnel, in Hopper tunnel, and also in Freehold crosscut.

"We have developed one curious fact in the history of Mount Morgan. Hundreds of people have wondered, 'How could Mount Morgan, only 26 miles from Rockhampton, remain undiscovered so many years, especially as Linda Gully at its foot was worked for gold many years ago?' Our recent working on Lady Musgrave face has taken in the original prospecting trench sunk by the Morgan Bros., and, strange but true—call it judgment, luck, or fate—had this trench been put in 10 feet north or south they would not have found any gold without sinking 20 feet. The trench is just in the centre of the only payable stone that comes to the surface in this part of the mountain. Ten feet north or south would have proved a duffer, and Mount Morgan, out of which the company have taken 844,374 ounces of gold, would possibly still be undiscovered, and still known as the Iron Mountain.

During the last six months we have tried a number of experiments to accelerate the washing or leaching of kaolin, but so far, in my opinion, none are sufficiently successful to warrant the reconstruction of our immense plant. As your manager, and a large shareholder, I emphatically advise that, so long as we have ironstone and quartz left to mix with the kaolin and gradually work it off, our present system is the best yet discovered."

## CANADA.

### PROVINCE OF BRITISH COLUMBIA.

(From our Special Correspondent.)

SAN FRANCISCO, Aug. 27.

A press dispatch from Victoria tells of the negotiations now pending for the sale of the Wellington collieries. It is reported that C. E. Pooley, Q. C., secretary of the E. & N. Railroad, and D. R. Harris propose leaving in a few days for England to complete the sale of the collieries, the property of R. Dunsmair & Sons, to an English syndicate. The price mentioned is $2,500,000, and includes the mines, docks, vessels, etc.

### PROVINCE OF NOVA SCOTIA.

#### COAL.

(From our Special Correspondent.)

Work continues brisk in Cape Breton, and steady shipments are being made, the Reserve mine loading recently in one day's work 2,300 tons. The Gardener mine is being fitted with a Jeffrey electric coal cutter, and a successful trial of an Ingersoll cutter has been made at the Reserve mine. The Terminal City Company has leased its coal property at the mouth of the Strait of Canso to Mr. Harrington and others, of Hawkesbury, who purpose opening a mine. The East Bay Coal Company has been formed to test some properties near East Bay which are believed to hold anthracite.

In Pictou County work continues moderately active. The Acadia Coal Company has purchased the Black Diamond Company's coal mine at Westville, giving cash and some valuable iron ore property in Pictou County. The work of reopening the Ford pit is being successfully continued. The commission appointed by the Provincial Government to sit with the inspector of mines for the purpose of determining what explosives may be allowed in mines considered gaseous, is to meet at Stellarton, September 3d. At present roburite, which is largely used in gassy mines in England, is manufactured in Halifax, and it is reported that a new and safe explosive has been prepared by the Acadia Powder Company for the judgment of the commission.

In Cumberland County work is steady and the output is reported a little ahead of that of last year to date. The surface works of the Lawson mine were recently burned; it had secured a 10,000-ton contract with the Intercolonial Railway.

#### GOLD.

There is little new to report concerning gold mining in this province. The Malaga and Boston companies are working steadily in Queens County. The Philadelphia Company's property has been advertised for sale. The Lake Catcha returned about $25,000 last month, and the usual returns were received from the Thompson and Salmon River mines. A good deal of prospecting has been carried on during the dry weather, but no discoveries of value have yet been published.

#### IRON.

A partial discontinuance of work is reported from the Londonderry Mills. The new Glasgow Iron, Coal & Railway Company has the foundations of its furnace in, and is pushing its railway which it hopes to have open to traffic this fall.

Some manganese ore of good quality is being shipped to New York from the Magdalen Islands, and a large deposit of average grade is being tested at Chehcamp in Cape Breton.

## MEXICO.

### SONORA.

CERRO BLANCO.—One of the most expensive enterprises that have ever been attempted by any mining company in Sonora, says *El Minero Mexicano*, has been the building of the Cerro Blanco Railway, which is to connect the station of Cerro Blanco, on the Sonora Railroad, with the mines of the same name, located 17 miles from the station in the heart of the Sierra Madre. The new railroad is of 24-in. gauge, with locomotives of great power and rolling stock of large relative capacity. The permanent way is stated by the inspecting engineers to be constructed with great solidity, with heavy rails laid upon a massive roadbed. The ascent is about 2,500 ft. in 12 miles, and this altitude is attained by a series of curves, some of which are of 45°, and on grades of 6%. About three-fourths of this work is now concluded and the tracklaying will be resumed as soon as a tunnel 600 ft. long at one end of the line is completed. At the mines the company is getting its mill ready to commence work as soon as the railroad is completed. Among the fittings of this mill will be a steam stamp, which is expected to work up about 100 tons of ore a day. The mill will be prepared to do custom work as well as treat the ores of the company.

ESPERANZA AND SAN FRANCISCO.—These gold mines are in the Magdalena district, about 25 miles south of Nogales. They are probably the best developed mines in the district, says *El Minero Mexicano*, as they have some 2,000 ft. of tunnels and shafts. The ore averages $20 per ton. There is plenty of wood and water in close proximity to the mines. The owners are Dr. Alexander Clark and Frank D. O'Brien.

SANTO NIÑO.—A correspondent of *El Minero Mexicano* in the Trinidad district, writes that one of the most promising mines there is the Santa Niña, which belongs to Messrs. Espiridion Campa and Epigmenio Rascon. The ores are quite abundant, and carry both silver and gold with an average value of $60 per ton, although there is a good deal that will run up to $500. The owners have been working on a small scale, but are getting ready to put up a mill which will enable them to turn out a product equal to that of any other mine in the district.

TUMACACORI.—This silver mine is located about 25 miles southwest of Nogales. It is owned by Mr. L. Ephraim, of Nogales, who has expended considerable money in its development. The tunnel of the mine is about 600 ft. long and the workings expose six veins. No. 2 vein is stated to be 40 ft. in width, carrying from 1 to 6 ft. of solid ore. The ore averages from $150 to $200 per ton.

## NEWFOUNDLAND.

TILT COVE COPPER COMPANY, LIMITED.—The output of the East mine during July was 3,900 tons, assaying 5% copper (wet assay). The company is short of men, and work in the Bodens level has been temporarily suspended, the men at work there being required elsewhere to maintain the output of the mine.

## SOUTH AFRICA.

DE BEERS DIAMOND COMPANY, LIMITED.—For some time after the collapse of the speculation in South African gold and land shares took place, De Beers Diamond shares kept moderately steady, says the *Economist*, but recently they also have become seriously depreciated. In 1887, when the amalgamation negotiations were in progress, these shares were quoted at 20½, and as late as last year they stood at over 23. This year the highest quotation has been 17¾; but during the past week sales have been effected at under 11, though the "bulls" have since forced the price up to over 12 again. This is, of course, a remarkable shrinkage; but it is by no means an unnatural one, for even at the present price the yield to an investor on the basis of the dividends for the last two years is less than 10%, and those who follow closely the fortunes of the diamond industry express the strong opinion that the 20% dividends which the company has paid will not be maintained. The advance in the price of diamonds, which was brought about by the completion of the monopoly, had the effect of throwing the diamond-cutting trade into a chaotic condition, and before the managers of the De Beers Company could alter their policy, the financial breakdown in the Argentine Republic, and the widespread depression and distrust which followed it, resulted in the cessation of purchases by those who had been the company's best customers. In consequence of this state of things the De Beers Company found it necessary to restrict the productions of diamonds very considerably. Two of the properties which it acquired at great expense, Bullfontein and Dutoitspan, have been practically closed for many months past, and the Kimberley and De Beers mines are only being worked to about one-half of their full capacity. To tempt purchasers the company has reduced prices of diamonds in the rough, and these are now ruling far below those of 18 months ago. Locally, too, the company has got into bad odor. The restriction of the output necessitated the discharge of a very large number of miners, and one or two of the vil-

lages, which were thriving and prosperous places before the amalgamation of the several companies took place, have been well nigh depopulated, and the trade of Kimberley itself has fallen off greatly. The distress in the diamond fields has indeed become so grave that a special committee of the Cape Parliament has been appointed to inquire into its causes and to suggest remedies, the appointment of this committee being regarded as a direct attack upon the De Beers Company, not so much on account of what it has done in the past as in consequence of the fears entertained that it will acquire possession of the Wesselton property, which has been proved to be diamondiferous. It is anticipated that if the newly discovered mine gets into the hands of the De Beers Company, either it will be kept unworked or the production of the Kimberley and De Beers Mines will be still further restricted. So great is the popular feeling against the De Beers Company that a few weeks ago an attempt was made to blow up the company's offices with dynamite, and the offer of a reward of £500 has failed to effect the apprehension of the perpetrators of the outrage.

### SWEDEN.

With the object of affording greater facilities for the export of Swedish iron ore to England and Westphalia, it is projected, says *Iron*, to construct a canal 25 kilometres long between the town of Uddevalla, on the west coast, and Lake Wennern; and, further, a railway between Ställdalen and Karlfors, thus constituting a more direct route for the dispatch of the output of the well-known Grängesberg mines. These mines would then be brought into immediate connection with the immense water power of the falls at Gullspang and Trollhättan, and it is very probable that before many months elapse this advantageous site will be utilized for the establishment of large ironworks. Considerable quantities of iron ore are at present sent from the Grängesberg mines, by way of Oxelösund, to eastern Germany. The canal to Uddevalla would shorten the route for the export of Grängesberg ore to Great Britain and western Germany by over 100 kilometres per railway and 400 kilometres by sea.

### UNITED KINGDOM.

#### ENGLAND.

An explosion took place on the 31st ult. in the Malago colliery, near Redminster, Somersetshire. Fortunately only a few miners were at work at the time, but 10 men were killed. The concussion wrecked the shaft and headhouse.

NEWCASTLE CHEMICAL COMPANY.—This company while boring experimentally near its salt boreholes at Cowpen, near Middleborough, recently, in the hope of finding natural gas, came across a bed of coal two ft. thick, about 1,970 ft. from the surface. The coal is said to be of very good quality. It is thought that another seam of coal lies beneath the one that has just been struck.

## CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Sept. 4.

**Heavy Chemicals.**—Generally speaking the market for heavy chemicals is very quiet. Not much business has been done, but prices have remained quite firm, and there has been quite a good deal of inquiry for future shipments of carbonated soda ash, alkali and caustic soda, following the resumption of work by the glass manufacturers over the country.

Caustic Soda.—For the 70%-74% variety quotations are 3·02½@3·05c.; 76% (Greenbank), 3·25c.; 77%, 3·15c. Prices are firm and the market quiet.

Carbonated Soda Ash.—We quote, 48%, 1·52½@1·65c., according to brand; 58%, 1·45@1·55c. Not much is doing for spot delivery.

Caustic Soda Ash.—There is very little caustic ash on the spot which makes the quotation for it 1⅝c.

Alkali.—High test alkali is quiet at 1·45@1·50c.

Bleaching Powder.—There is little bleach in this market, and quotations range from 1·97½@2·05c.

Sal Soda.—Sal soda on the spot is quoted at 1.20c., owing to the short supply. To arrive quotations are 1·10c.

**Acids.**—Nothing of interest has occurred in the acid market during the past week. Business is going on as it has for a month past; new business is the exception rather than the rule, although we hear of a slightly better demand for sulphuric. Quotations show no change from last week. We repeat them: Acid per 100 lbs. in New York: Acetic, $1.50@$1.65; alum, $1.50@$1.65; muriatic, 18°, 80c.@$1; muriatic, 20°, 90c.@$1.10; muriatic, 22°, $1@$1.20; nitric, 40°, is selling for $4.50, and from that upward, according to quality, etc.; nitric, 42°, $5@$6; oxalic, $7@$7.25; sulphuric, 60°, 75c.@$1; sulphuric, 66°, 85c.@$1; tartaric, $3.30@$3.40.

Brimstone.—This market is very quiet just now, due to the fact that consumers are unwilling to come into the market at the ruling high prices. Buyers generally have been holding off for some time in expectation of a decline, but late cable advices inform us that the transatlantic market is firmer and shows an advancing tendency, caused by the large European demand. We quote September steamer, $27@$27.50 for best unmixed seconds; best unmixed thirds 50c. less.

**Fertilizing Chemicals.**—The market is commencing to show signs of improvement. The approach of the fall renders it probable that more activity will rule for some time. A better inquiry has been experienced during the present week, and it resulted in some odd sales, which are but the precursors of heavier business in the near future. Our quotations this week are: Sulphate of ammonia, 3·05@3·10c. Bone sulphate, 3·02½@3·05c. Dried blood, $1.95@$2 per unit. Tankage, $19@$21. Azotine, 1·95c. Bone meal, $22.50@$23.50; raw, $24@$26. Fish scrap, $21.50@$22.50. Acidulated fish scrap, $11.50.

Double Manure Salts.—We quote the Syndicate price of 1·10@1·12½c. for 48%. For 90% to 95% basis, 90% foreign invoice, weights and lists, 2·07½@2·10c. Lots under 50 tons are proportionately higher.

South Carolina phosphate rock is unchanged. We quote for land rock $7@$8, wet and dry, respectively, f. o. b. vessels at mines, and $7.25@$8.25 f. o. b. cars. High-grade river rock is scarce. Low grades taken from the marshes are selling at about $7.25.

Kainit.—This article is very dull at the old prices, $8.75@$9.25, according to quantity. During the month of August, 2,500 tons of kainit arrived at this port, and were delivered on old contracts.

Muriate of Potash.—During the past week there were neither sales nor arrivals at this port. Business in muriate is reported dull and featureless. Quotations are unchanged: $1.77½@$1.82½, according to quantity.

Nitrate of Soda.—The end of the Chilian revolution will have no marked effect on this market unless it be to steady prices. During the past fortnight there has been quite a movement in nitrate, but the past few days have been quiet. Prices are strong at $1.90 ex ship in port, and $1.92½ to arrive.

Messrs. Mortimer & Wisner, the well known nitrate brokers of this city, send us the following interesting statistics, issued under date of the 1st inst.

| | 1891. Bags. | 1890. Bags. | 1889. Bags. |
|---|---|---|---|
| Imported into Atlantic ports from West Coast, S. A., Jan. 1—Sept. 1, 1891 | 465,212 | 483,802 | 349,801 |
| Imported into Atlantic ports from Europe, Jan.1—Sept. 1, 1891 | 18,802 | .... | .... |
| | 484,014 | 483,802 | 349,801 |
| Stock in store and afloat Sept. 1, 1891, in New York | 95,743 | 38,754 | 53,076 |
| " " " Boston | 1,000 | .... | .... |
| " " " Philadelphia | .... | .... | .... |
| " " " Baltimore | 5,000 | 3,500 | 11,500 |
| To arrive, actually sailed | 171,500 | .... | .... |
| Additional charters | 250,000 | 489,700 | 257,000 |
| Total supply, when shipped | 523,243 | 531,954 | 321,576 |
| Visible supply to Dec. 1, 1891 | 273,243 | .... | .... |
| Stock on hand Jan. 1, 1891 | 36,454 | 22,069 | 84,043 |
| Deliveries past month | 92,781 | 40,023 | 51,449 |
| Deliveries since Jan. 1 to date | 424,725 | 463,557 | 372,268 |
| Total yearly deliveries | .... | 673,679 | 546,589 |
| Prices current Sept. 1, 1891 | 1·90@1·95 | 1·70c. | 1⅞@1·90 |

NOTES OF THE WEEK.

The bi-carbonate depot of the Pennsylvania Salt Manufacturing Company, at Natrona, Pa., was destroyed by fire on the 30th ult. Loss, $100,000, covered by insurance.

**Liverpool.** Aug 26

(Special Correspondence of J. P. Brunner & Co.)

Trade in heavy chemicals continues rather slow, but prices are well maintained.

Soda ash is in moderate request, and nominal quotations are as follows: Caustic ash, 48%, £5 2s. 6d. per ton; 58%, £6 4s. per ton; carb. ash, 48%, £5 7s. 6d. per ton; 58%, £6 10s. per ton, all net cash. For prime brands a premium is demanded.

Soda crystals are perhaps moving more freely at £3 5s.@£3 7s. 6d. per ton net cash.

Caustic soda is only selling to a very moderate extent, but for whatever is wanted full prices have to be paid. Manufacturers still have stocks accumulated at the works, and a good deal of plant continues shut down. Nearest spot values are as follows: 60%, £9 10s.@£9 15s. per ton; 70%, £10 15s.@£11 per ton; 74%, £11 15s.@£12 per ton; 76%, £13 and upward—all net cash.

Bleaching Powder.—There are inquiries from the States, but as there are no resale parcels now offering, the orders have to be returned. Prices here for hardwood range from £7 10s. to £7 15s. per ton for "prompt or September deliveries," with an advance of 5s. per ton asked for October and forward.

Chlorate of potash is still quiet at 5⅝d. per lb., less 5%.

Bicarb. soda is selling to a fair extent at £6 15s. @£7 per ton, less 2½% for one cwt. kegs, according to brand and quantity, with usual allowances for larger packages.

Sulphate of ammonia still keeps very firm at £11 2s. 6d. per ton for good grey 24% in double bags, and £11 7s. 6d. per ton for 25% in double bags, less 2½% discount, f. o. b. Liverpool.

(Special Correspondence of Geo. G. Blackwell.)

LIVERPOOL, Aug. 21.

There have been no unusual fluctuations to report in our market this week. Manganese: arrivals have somewhat improved; prices unchanged; magnesite moves slowly, and prices are unaltered; raw ground £6 10s. and calcined £12 10s; bauxite (Irish Hill brand) in strong demand at full prices; first lump, 20s., seconds, 16s., and third 12s. Barytes: Carbonate easy; while finest white sulphate is scarce. "Angel White," No. 1, 70s.; No. 2, 60s. to 65s., No. 3, 45s. Pumice stone: Picked lump steady; ground, more doing. Iron ore, also, manganiferous and Santander, easier; Irish and Cumberland inquired for. Emery stone: Best qualities in demand both for home as well as export, bringing full figures; No. 1 lump £5 10s. @£6, smalls £5@£5 10s. Fullers' earth unchanged; best lump, 55s.; fine impalpable ground, £7; "Emerald" ground, 80s. Scheelite, wolfram, tungstate of soda and tungsten metal scarcer, while prices are advancing. Chrome ore: There is a little more doing, and prices are unaltered. Antimony ore and metal: Prices still lower. Asbestos easier. Potter's lead ore of best quality steady; smalls, £13@£14; selected lump, £15@£16. Felspar and fluorspar easier. Ferromanganese: Somewhat easier, 75%, £12; 85%, £13 15s. Plumbago: A fair business doing at good prices; Spanish, £6; best Ceylon lump at last quotations; Italian and Bohemian, £4@£12 per ton. "Founders," £5@£6; Blackwell's "Mineraline," £10. French sand, 20s.@22s. 6d. Ground mica, £50. China clay steady; common, 18s. 6d.; good medium, 22s. 6d.@25s.; best, 30s.@35s. (at Runcorn.)

## MINING STOCKS.

[For complete quotations of shares listed in New York, Boston, San Francisco, Baltimore, Denver, Kansas City, Birmingham, Ala., Pittsburg, St. Louis, London, and Paris, see pages 284 and 286.]

New York, Friday Evening, Sept. 4.

The week under review has been a dull one—as dull as any of its dull predecessors. The boom anticipated by some last week was nipped in its very incipiency, and with but few exceptions prices have declined. At the Consolidated Stock and Petroleum Exchange the activity in railroad stocks did not extend to the mining side.

During the week there were 23,988 shares sold, of which 4,138 were dividend payers, and 19,850 non-dividend. Last week there were 4,655 dividend-paying shares sold, and 22,670 non-dividend payers, making a total of 27,325 shares sold, a decrease of 3,337 shares this week.

The Comstocks were generally somewhat lower in price than during the week preceding, and were dealt in less. Alta shows sales of 600 shares at 60c. Best & Belcher opened at $3.60 and declined to $3.30; at the close it sold at $3.40, with total transactions amounting to 500 shares. Chollar declined to $2 with sales of 450 shares. Comstock Tunnel stock was dealt in to the extent of 3,100 shares at 16@18c. Sales of Mexican aggregated 700 shares at from $2.50, assessment paid, to $2.25, assessment not paid. Occidental shows sales of 300 shares at 85@90c. Potosi declined from $4.65 to $3.10, with sales of 400 shares.

Scorpion had a single transaction of 400 shares at 40c.; Union Consolidated was stationary at $2.30; Utah closed at 75c., 900 shares having been sold during the week. Crown Point declined to $1.65; Gould & Curry was quiet at $1.70@$1.75; Hale & Norcross sold 300 shares at $1.75@$1.85; Ophir was dealt in to the extent of 375 shares at from $3.75 to $3 85; there was a single sale of 100 shares of Sierra Nevada at $2.35; and of Yellow Jacket 300 shares changed hands at $1.55@$1.60.

Mt. Diablo was neglected at $2.30. Horn Silver had a single sale of 100 shares at $3.50. The annual meeting of this company will be held on October 6th at Frisco, Utah. The superintendent writes that the ore reserves are constantly increasing.

Among the California stocks there were the customary large sales of the low-price shares. Of Astoria, 7,000 shares changed hands at 1c. to 2c. Middle Bar was rather more quiet this week; 1,150 shares sold at 2c; Belmont shows sales of an equal number of shares at 83@85c.

Brunswick at 11@12c. had sales of 2,500 shares. Emmet shows a single transaction of 100 shares at 55c., and Plymouth another at $2. Standard Consolidated was in request, but holders did not seem inclined to let go, except at good prices. We are informed by telegraph that the August shipment of the Standard Consolidated amounted to $24,300. The expenses for the same period were $15,300, leaving a profit for the month of $9,000. There is an estimated balance on hand of $37,000.

The Colorado shares were quiet. There were sales of 500 shares of Leadvile Consolidated at 12c., and 300 shares of Silver Cord at 20c. Robinson Consolidated was in some demand at 35c.

El Cristo was very quiet. Sales amounted to 200 shares only, at 45@50c.

**Boston.** Sept. 3.

(From our Special Correspondent.)

The week under review opened with very little doing in copper stocks and prices holding fairly steady. On Tuesday a marked change was developed; the market seemed to be full of orders to purchase all the favorite stocks, resulting in a substantial advance in prices all through the list. This was continued through yesterday, sales aggregating nearly 18,000 shares for the day and prices being the highest so far for the year. The market to-day has been less active with a slight reaction. This change is doubtless owing to the better demand for ingot copper and the ex-

pectation of an advance in price, which will add largely to the profits of all the producing mines.

The Montana mines have been the leaders in the advance, Boston & Montana selling up to $50 and Butte & Boston touching $20. To-day they sold at $48⅞ and $18½, respectively.

Calumet & Hecla advanced from $260 to $265 on light sales. The good reports from the Centennial started buying of the stock, which had been selling around $17 for some time, and advanced the price to $22, reacting to $20 on realizing sales. Osceola touched $40, and lost only $½ on sales today, closing quite firm.

Tamarack advanced from $157 to $170, holding the advance on latest sales. Quincy sold up to $115 yesterday, but declined to-day to $110. Kearsarge was in good demand, selling up to $16¾, and declined to $15½, a net gain of $2½ for the week.

Franklin did not participate largely in the advance, but sold up to $17¾ and closed at $17½, a net advance of $½. Atlantic gained $2, from $14 to $16 and held the advance.

Allouez advanced from $2 to $2⅝, reacting to $2½. It is stated that an assessment of $1 per share is among the possibilities. Arnold also advanced from $1¼ to $1⅜, with later sales at $1¾. National advanced from $3 to $3½, and Huron sold at $1.

Santa Fé was quite active and sold up to 60c., an advance of 10c. Tecumseh appeared after a long absence and sold at $3. Humboldt sold at 50c. and Hungarian at 25c. Should the market continue to advance many of the low-priced stocks, which have lain dormant, will be likely to be actively dealt in.

3 P. M.—The market was fairly steady this afternoon. Boston & Montana sold at $48¾, Butte & Boston $18½. Centennial declined to $19. Huron advanced to $1⅛ and Tecumseh to $3⅛.

### Denver.

Prices and sales for the week ending Aug. 29th. 1891:

| Company. | Opening. | H. | L. | Closing Bid. | Sales. |
|---|---|---|---|---|---|
| Mines. | | | | | |
| Alleghany | 25a | .... | .... | .... | ..... |
| Amity | 02⅛ | 03 | 02⅛ | 03 | 15,800 |
| Bangkok-C.-B | 05¼b | *05½ | ‡05 | 05¼ | 3,300 |
| Bates-Hunter | 67a | 66 | 65 | 64 | 300 |
| Brownlow | 06a | *08¼ | 07 | 07¾ | 36,700 |
| Calliope | 07 | .... | .... | 15 | ..... |
| Cash | .... | .... | .... | .... | ..... |
| Clay County | 112b | 114 | 114 | 112 | 500 |
| Gettysburg | 16¼b | 18 | 16 | 16 | 400 |
| Gold Rock | 60b | *62 | 59 | ‡62 | 10,200 |
| Leavenworth | 07½b | .... | .... | 08 | ..... |
| Little Rule | ‡108b | .... | .... | ‡108 | ..... |
| Matchless | 300b | .... | .... | 300 | ..... |
| May-Mazeppa | 120a | ‡125 | 113 | 110 | 2,000 |
| Oro | 99b | .... | .... | 99 | ..... |
| Pay Rock | 04½ | 07 | *04 | 03 | 21,300 |
| Puzzler | 03¼b | *03¼ | 03 | 02½ | 1,200 |
| Reed National | .... | .... | .... | 63 | ..... |
| Rialto | 110a | 110 | 110 | .... | 200 |
| Running Lode | 21b | ‡23 | 21¼ | 21½ | 10,900 |
| Whale | 17b | .... | .... | 15 | ..... |
| Bal. Smuggler | 57a | ‡57½ | *57½ | 50 | 500 |
| Prospects. | | | | | |
| Argonaut | 08b | .... | .... | .... | ..... |
| Big Indian | 15a | 10 | 10 | 05 | 100 |
| Big Six | 06¼b | 06½ | 06¼ | 06 | 2,000 |
| Century | 40a | ‡35 | ‡35 | ‡35 | 1,000 |
| Claudia J | 04 | .05 | 04 | 05¼ | 16,300 |
| Nat. G. & Oil Co | 15b | *16 | 14½ | 14 | 1,900 |
| Diamond B | 03¼ | *04½ | 02¾ | 03¾ | 31,400 |
| Emmons | 45½ | *48 | 45½ | *48 | 8,000 |
| Golden Treas | 34¼ | ‡80 | 34¼ | 65 | 10,000 |
| Ironclad | 05½ | 06½ | 05½ | 06 | 19,800 |
| John Jay | 04¼b | 04¼ | 04 | 03¾ | 6,500 |
| Justice | *07½ | *07¾ | 06¼ | 06½ | 11,100 |
| Legal Tender | 03a | 01¼ | ½ | 01 | 8,300 |
| Morning Glm | .... | .... | .... | 42 | ..... |
| Park Consolidated | 10b | .... | .... | 10 | ..... |
| Potosi | 04b | 04 | 03¼ | 04¼ | 2,400 |
| Total | | | | | 216,100 |

* Buyer 30. † Buyer 60. ‡ Seller 60. § Seller 30. a Asked. b Bid.

### San Francisco. Aug. 27.

(From our Special Correspondent.)

The mining stock market has during the current week been less active, with prices as a general rule lower than last week. The volume of business has been small, but the values of the leading Comstocks was well sustained. Consolidated California & Virginia, Ophir and Mexican are closely held by insiders, and as the work now being done in several of the North End mines is particularly interesting and may result in the discovery of ore any day, such a circumstance would cause the present stagnating influences affecting the market to at once disappear. A week ago Consolidated California & Virginia sold for $7.25, but it has been selling the last few days at from $6.55 to $6.75, ruling at the latter figure to-day. Ophir has shown a hardening tendency, and has sold for $3.70. Most of the other North End stocks have sold steady: Mexican at $2.25; Sierra Nevada, $3.10; Union Consolidated, $2.40, and Utah, 80 cents.

The Middle Group of Comstocks have not been so anxiously inquired for this week, Savage, at $2.70, an advance of 35 cents, being the only one in demand. Best & Belcher ruled at $3.55; Challar, $2.10; Gould & Curry, $1.70, and Potosi, $3.80.

The Gold Hill stocks have been quiet, even Yellow Jacket not selling higher than $1.60, although regular shipments to the Santiago & Vivian mills continue. Bullion has been the one most in demand and has ruled at $2.85; Belcher at $1.30; Exchequer at $6.75, and Justice at 60 cents; several moderately large lots of Imperial have been sold at 10 cents.

In the several sessions of the Board to-day none of the outside stocks were sold, and during the week the sales have been merely nominal at prices much the same as a week ago.

SAN FRANCISCO, Sept. 4.—(*By Telegraph*).—The opening prices to-day, on the average, show but little change over the prices ruling during the past week. The following are to-day's quotations: Alta, 50c.; Best & Belcher, $3.25; Bodie Consolidated, 50c.; Belle Isle, 40c.; Bulwer, 20c.; Challar, $1.85; Consolidated California and Virginia, $6⅝; Crown Point, $1.50; Eureka Consolidated, $3; Commonwealth, 20c.; Gould & Curry, $1.60; Hale & Norcross, $1.60; Mexican, $2.10; Mono, 25c.; Navajo, 15c.; North Belle Isle, 20c.; Ophir, $3.60; Potosi, $2.90; Savage, $2.60; Sierra Nevada, $2.95; Union Consolidated, $2.15; Yellow Jacket, $1.30.

### Lake Superior Iron, Gold and Silver Stocks.

Special Report by A. M. Helmer, Milwaukee, Wis.)

| *Iron.* | |
|---|---|
| GOGEBIC RANGE: | |
| Anvil | $4.00 |
| Ashland | 51.00 |
| Aurora | 9.50 |
| Bessemer Consolidated Bonds | 20% |
| Brotherton | 2.50 |
| Cary | .... |
| Colby | .... |
| Father Hennepin | .... |
| Germania | 8.00 |
| Gogebic Iron Syndicate | .25 |
| Iron Belt | 2.00 |
| Metropolitan Land and Iron Co | 61.00 |
| Montreal | 10.50 |
| North Pabst | 2.25 |
| Northern Chief | 30.00 |
| Odanah | 13.50 |
| Pabst | .... |
| Palm | 1.75 |
| Pence | 1.25 |
| Penokee and Gogebic Developm. Co. | .... |
| Ruby | .... |
| Ryan | .35 |
| Section 33 | 13.50 |
| Windsor | .... |
| Wisconsin Iron and Steel Co | .50 |
| MARQUETTE RANGE: | |
| American | $2.25 |
| Champion | 80.00 |
| Cleveland | 16.00 |
| Cleveland Cliff Iron Co | .... |
| East New York | 2.00 |
| Humboldt | .... |
| Iron Cliffs | .... |
| Jackson | 104.00 |
| Lake Superior | 56.00 |
| MARQUETTE RANGE: | |
| Michigamme | .... |
| Milwaukee Iron Co. | $5.00 |
| Negaunee | .... |
| Pittsburg and Lake Angeline | 140.00 |
| Republic | 27.00 |
| Riverside | 2.00 |
| MENOMINEE RANGE: | |
| Aragon | .... |
| Chapin | .... |
| Commonwealth | 10.50 |
| Florence | .... |
| Hamilton Ore Co | .... |
| Lincoln | 2.00 |
| Mansfield | .... |
| Mastodon | .... |
| Monitor | .... |
| Norway | .... |
| Paint River | .... |
| Pewabic | .... |
| Quinnesec | .... |
| Sheldon and Shafer | .... |
| Sheridan | 5.00 |
| Vulcan | .... |
| Youngstown | .... |
| VERMILION RANGE: | |
| Chandler | 35.50 |
| Chicago and Minnesota Ore Co | 100.00 |
| Clingstone | .25 |
| Inter-Ocean | .25 |
| Minnesota Ore Co | 72.50 |
| Northwestern | .25 |
| Pioneer | .... |
| Vermilion | .25 |
| Vermilion P. & L. Co | 2.25 |
| *Gold and Silver.* | |
| Badger Silver Mining Co | 2.50 |
| Michigan Gold Co | .30 |
| Peninsula Gold Mining Co | .... |
| Ropes Gold and Silver Co. | 1.50 |

### Salt Lake City.

Prices and sales for the week ending Aug. 29, 1891.

| Name and Location of Company. | Opening. | Highest. | Lowest. | Closing. | Sales. |
|---|---|---|---|---|---|
| Alice, Mont | 1.55 | 1.55 | 1.55 | 1.55 | .... |
| Alliance, Utah | 1.00 | 1.00 | 1.00 | 1.00 | .... |
| Anchor, Utah | 5.50 | 5.50 | 5.50 | 5.50 | .... |
| Apex, Utah | .16 | .18½ | .15 | .16½ | 12,500 |
| Barnes Sulphur, Utah | .01 | .01½ | .01 | .01 | 4,100 |
| Big Hole Placer, Mont. | .12 | .12 | .12 | .12 | .... |
| Centen'l Eureka, Utah | .... | .... | .... | .... | .... |
| Cleveland Cons'l, Utah | .... | .... | .... | .... | .... |
| Congo, Utah | .17 | .18 | .14 | .14 | 17,000 |
| Crescent, Utah | .58 | .60 | .50 | .53 | 9,600 |
| Dalton, Utah | 35 | 35 | 35 | 35 | 8,000 |
| Daly, Utah | 20.50 | 20.50 | 19.75 | 19.75 | 50 |
| Glencoe, Utah | .... | .... | .... | .... | .... |
| Horn Silver, Utah | 3.30 | 3.35 | 3.20 | 3.25 | 800 |
| Malad Con., Idaho | .02½ | .02½ | .01¾ | .01¾ | 14,000 |
| Mammoth, Utah | 2.80 | 2.85 | 2.75 | 2.80 | .... |
| North Eureka, Utah | .10 | .10 | .10 | .10 | 5,000 |
| Northern Spy, Utah | .... | .... | .... | .... | .... |
| Ontario, Utah | 38.50 | 39.75 | 38.00 | 39.00 | .... |
| Stanley, Utah | .07 | .07½ | .05 | .06 | 20,500 |
| Utah L. & C. Co., Utah | .... | .... | .... | .... | .... |
| Utah Oil Co., Utah | .... | .... | .... | .... | .... |
| Woodside, Utah | .... | .... | .... | .... | .... |
| Total sales | | | | | 91.550 |

### St. Louis. Sept. 2.

(From our Special Correspondent.)

Mining matters are gradually getting back to their old activity. Sales this week have been very fair, though monoplized by a few leading stocks. Prices, however, show on the whole a slight decline. Elizabeth was the principal stock dealt in, and by its irregular movements caused no small excitement. It opened at $2.30 with a sale of 800 shares, and on the following day fell to $2.07½, with sales amounting to 300 shares. Later 800 shares sold at $2.25. On Saturday good news from the mine caused the price to rise to $2.47½ to $2.50, at which 600 shares were sold. On Monday a boom was felt in the market and 3,200 shares sold at $2.57½@$2.60. On Tuesday 400 shares sold at $2.52½@$2.62½. To-day the market closes at $2.50. The news from the mine is very encouraging.

Eight hundred shares of Yuma sold this week, 600 bringing 33¾@31¼c.; and 200 shares on Tuesday, 35c. The market closes strong at 34¾c.

Granite Mountain was on the market this week. 40 shares being sold, 30 at $23.50 and 10 shares sold at $23. The market closes strong at $23.25. Shipments for the past week were 42 bars, containing 58,244 oz. of silver and 68 oz. gold.

Montrose had one sale of 1,400 shares at 55@52½c. The market opened at 50c. and closes quiet at 51¼c.

One sale, 8,000 shares of Little Albert at 1½c., represents the sum total of business in this stock for this week.

Aztec opened at 5c. and closes at 8c.; no sales. Central silver was in demand at 3@2c.

Small Hopes opened and closes at 70c.; the lowest quotation of the week was 67½c. Silver Age closes at 87½c. from an opening of 85c.

### MEETINGS.

Consolidated Golden Gate and Sulphuret Mining Company, at the office of the company, No. 320 Sansome street, San Francisco, Cal., September 10th, at 12 M.

Grey Eagle Copper Mining and Smelting Company, at the office of A, W. Cox, Deadwood, S. D., September 10th, at 10 A. M.

### DIVIDENDS.

Granite Mountain Mining Company, dividend No. 80 of twenty-five cents per share, $100,000, payable September 10th at the office of the company, Room 128, Laclede Building, St. Louis, Mo.

Mollie Gibson Consolidated Mining and Milling Company, dividend No 11 of five cents per share, $50,000, payable September 10th at the office of the company, in Colorado Springs, Colo. Transfer-books close September 5th, and reopen September 10th.

### ASSESSMENTS.

| Company. | No. | When levied. | D'l'nq't in office. | Day of sale. | Am't per share. |
|---|---|---|---|---|---|
| Belcher, Nev | 42 | Aug. 4 | Sept. 7 | Sept. 28 | .50 |
| Bullion, Nevada | 36 | July 16 | Aug. 20 | Sept. 8 | .50 |
| Challenge, Nev | 9 | July 31 | Sept. 2 | Sept. 23 | .50 |
| Chollar, Nev | 30 | July 14 | Aug. 18 | Sept. 8 | .50 |
| Exchequer, Nev | 31 | July 23 | Aug. 27 | Sept. 17 | .25 |
| Golden Fleece Gravel, Cal | 15 | June 30 | Aug. 12 | Sept. 19 | 5.00 |
| Gould & Curry, Nev | 67 | July 22 | Aug. 25 | Sept. 17 | .30 |
| Julia Cons., Nev | 24 | Aug. 1? | Sept. 16 | Oct. 8 | .10 |
| Justice, Nev | 48 | July 11 | Aug. 15 | Sept. 4 | .25 |
| Mexican, Nev | 43 | Aug. 10 | Sept. 11 | Oct. 6 | .25 |
| Pocahontas, S. Dak. | 7 | July 15 | Aug. 18 | Sept. 15 | .001 |
| Potosi, Nevada | 36 | July 21 | Aug. 25 | Sept. 7 | .50 |
| Savage, Nev | 76 | July 16 | Aug. 18 | Sept 30 | .50 |
| Teresa, Mex | 5 | Aug. 11 | Sept. 14 | Sept. 30 | 10 |
| Weldon, Ariz | 4 | Aug. 25 | Oct. 1 | Oct. 22 | .05 |

### PIPE LINE CERTIFICATES.

(Special report by Messrs. WATSON & GIBSON.)

There has been increased activity in Pennsylvania petroleum within the last few days at a declining price, and there has been a little more inquiry for Ohio oil. We are inclined to expect increased activity in petroleum and very likely a speculation such as has not been witnessed in at least twelve months.

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

| | Opening. | Highest. | Lowest. | Closing. | Sales. |
|---|---|---|---|---|---|
| Aug. 29 | 62¾ | 62¾ | 24¾ | 62¾ | 5,000 |
| 31 | 62¾ | 64½ | 62¾ | 64½ | 116,000 |
| Sept. 1 | 64½ | 64½ | 64¼ | 64¼ | 21,000 |
| 2 | 63⅞ | 63⅞ | 62 | 62 | 49,000 |
| 3 | 61 | 61½ | 59½ | 60 | 87,000 |
| 4 | 60¼ | 60¼ | 57 | 57½ | 175,000 |
| Total sales in barrels | | | | | 453.000 |

NEW YORK STOCK EXCHANGE.

| | Opening. | Highest. | Lowest. | Closing. | Sales. |
|---|---|---|---|---|---|
| Aug. 29 | .... | .... | .... | .... | ..... |
| 31 | .... | .... | .... | .... | ..... |
| Sept. 1 | 64 | 64 | 64 | 64 | 5,000 |
| 2 | .... | .... | .... | .... | ..... |
| 3 | .... | .... | .... | .... | ..... |
| 5 | .... | .... | .... | .... | ..... |
| Total sales in barrels | | | | | 5,600 |

## COAL TRADE REVIEW.

NEW YORK, Friday evening, Sept. 4th.

STATEMENT of shipments of anthracite coal (approximated) for the week ending August 29th, 1891, compared with corresponding period last year:

| Regions. | Aug. 29, 1891. | Aug. 30, 1890. | Difference. |
|---|---|---|---|
| Wyoming Region. Tons | 400.974 | 414,821 | Dec. 13,874 |
| Lehigh Region " | 126,137 | 149,534 | " 23,397 |
| Schuylkill Region " | 225,012 | 258,904 | " 33,892 |
| Total Tons | 752,123 | 283,259 | Dec. 71,163 |
| Total for year to date Tons | 24,746,730 | 21,967,685 | Inc. 2,779.045 |

PRODUCTION OF BITUMINOUS COAL for week ending Augus' 29th, and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

| | | | |
|---|---|---|---|
| Phila. & Erie R.R | 2.469 | 123,635 | 88,747 |
| Cumberland, Md | 77.990 | 2,740,397 | 2 486,040 |
| Barclay, Pa | 3,387 | 122,666 | 99,919 |
| Broad Top, Pa | 12,125 | 329,235 | 333,483 |
| Clearfield, Pa | 74,950 | 2,625,728 | 2,506,054 |
| Allegheny, Pa | 24,929 | 845,868 | 870,619 |
| Beach Creek, Pa | 49,178 | 1,582,990 | 1,239,640 |
| Pocahontas Flat Top | 48,274 | 1,508,405 | 1,265,623 |
| Kanawha, W. Va. | 50,176 | 1,528,399 | 1,337,658 |
| Total | 343,478 | 11,407,323 | 10,227,783 |

WESTERN SHIPMENTS.

| | 1891. Week. | 1891. Year. | 1890. Year. |
|---|---|---|---|
| Pittsburg, Pa | 20,615 | 826,740 | 552,821 |
| Westmoreland, Pa | 30,526 | 1,333,834 | 811,839 |
| Monongahela, Pa | 13,250 | 396,727 | 325,937 |
| Total | 64,391 | 2,557,301 | 1,690,597 |
| Grand total | 407,869 | 13,964,624 | 11,918,380 |

PRODUCTION OF COKE on line of Pennsylvania R. R., for the week ending August 29, 1891 and year from January 1st, in tons of 2,000 lbs.: Week, 105,878 tons; year 2,576,143 tons; to corresponding date in 1890, 3,536,959 tons.

### Anthracite.

The output for the week ending the 29th ult. was 752,123 tons, a decrease over the corresponding period in 1890 of 71,136 tons. The increase for the year to that date has been 2,779,045 tons. The returns for the month of July show the increase for the year to be 3,080,400 tons. It will thus be seen that instead of increasing the yearly excess, the output has been materially decreased during the past month. From the figures at hand for the four weeks ending the 29th ult., the product was 2,918,289 tons. From these returns it will be fair to conclude that the monthly returns will show that the operators held rigidly to their agreement to restrict the August production to 3,000,000 tons. This fact in itself will have a most beneficial effect on the trade

The trade has started in upon the month of September under very favorable conditions. The sales agents' agreement to restrict production to 3,000,000 tons for the month has been ratified by the presidents of the anthracite coal roads, as was the August agreement. The matter of prices is in very satisfactory shape. It was decided at the last sales agents' meeting to allow companies until September 15th to fill orders on their books. New orders are being taken at full circular rates. A thorough canvass of the trade failed to bring to light even a rumor of rate cutting. The September demand, as was expected, is strengthening, and will become very strong before the end of the month. In consideration of this fact even a large amount of coal offered below the circular price would have very little permanent effect on the market.

Notwithstanding this roseate condition of affairs there is no boom in coal; neither is one expected. Everyone familiar with the trade is fully aware of the heroic restrictive measures that were necessary three months ago to save it from demoralization. It was entrenched in its present firm position by restriction, and if it holds and strengthens the same it must be by restriction. Now that the companies have had their lesson—and rather an expensive one at that—they will be apt to move with caution. Already there is talk of an advance in October rates, and it is very probable that from 15 to 25 cents more per ton will rule on domestic sizes.

The long standing complaint filed with the Interstate Commerce Commission by J. C. Haddock and Haddock, Shonk & Company against the Delaware, Lackawanna & Western Railroad Company, alleging discrimination in the matter of anthracite freight rates was called in New York on Tuesday at the suggestion of the Commission, for the purpose of taking testimony. John A. Hillery, notary public, was supplied with subpœnas by the commission, and attempted to examine Mr. Frederick Gibbons, treasurer, and Wm. S. Sloan, third vice-president of the Delaware, Lackawanna & Western Railroad Company. These witnesses, upon advice of counsel, refused to answer material questions touching the prices received by their company for coal at points north and west, the matter of rebates, alleged to be allowed to certain shippers, and points relating to old or new contracts or rates, etc.

We learn from Mr. Haddock, that it will be necessary before the examination can proceed for the plaintiffs to go before a United States court, and obtain an order compelling the witnesses to answer or be liable to a fine for contempt. An adjournment was taken to the 15th inst. We could not learn the line of procedure which the plaintiffs expect to follow.

### Bituminous.

A perceptible improvement is manifest in the soft coal trade. It springs from the usual fall demand, and gives assurances of a brisk market. The insufficient car supply continues to hamper operations. Up to the present time it has not been seriously manifest, owing to a slack demand for coal; now that this latter is strengthening, it will be apt to be more seriously felt, notwithstanding it has had a beneficial effect on the market, inasmuch as it has prevented overstocking.

The Seaboard Association, which has done so much for the trade, still continues to exert a most wholesome moral influence. Along other lines, however, it seems to have outlived its usefulness. Reference is made to the matter of allotments. Most, if not all, of the companies interested have exceeded their percentages of tonnage, and as near as can be learned the controlling majority has agreed to disagree. This practically nullifies the articles of association, notwithstanding the monthly cash forfeitures, mentioned in this column early in the spring, are still being put up.

Prices are firm. There is a tendency on the part of the companies handling the best coals to ask a slight advance. However on the whole, the rates remain as fixed in the spring; neither are higher prices expected during the fall and winter. The business doing is almost entirely on contract. The little new business offered is that which is leaving the anthracite market, winter supplies for shoal water points, and the inland trade. As one dealer very aptly remarked: "There is very little 'shopping for coal' indulged in these days."

The ocean freight rate situation presents a most startling front. A combination has been formed among owners and brokers with a view of obtaining a better rate or suspending operations. Last week 55c. from ports to New England ports (the lowest recorded in history) ruled. This week a fleet of 100 sail tied up in Philadelphia and others are following suit. As a consequence vessels are now reported very scarce and in great demand, 55c. and 60c. being freely offered. Operators and dealers look for a material advance, and it is probable that 75c. will rule before the month closes.

### NOTES OF THE WEEK.

Mr. McKeen, M. P. P. for Cape Breton County, N. S., says the indications are that the output of coal in Cape Breton Island this year will be greater than any previous year, all the mines being taxed to their utmost capacity. The output from the island alone will be in the vicinity of 1,000,000 tons, as against 800,000 tons last year.

### Boston. Sept. 3.

(From our Special Correspondent.)

The month of September opened auspiciously for anthracite coal. The market possesses a good tone, which it promises to sustain. The demand has not increased to any great extent and it is a little early to tell how the September price will be received. Almost every one seems to have all the coal required at present. This large supply is gradually passing off and already the trade has shown a tendency to buy. The new circular price is held strong by most of the companies. Individuals have been cutting steadily, although it is now thought they will avail themselves of the fine market which promises.

The bituminous market is lifeless as far as new features are concerned. The report of last week covers the situation fully. There is still an abundance of coal coming forward on contracts. Spot offerings are fairly large. The $3.40 price for lots on cars is held fairly well.

The ocean freight situation has not changed any since last week. From New York 40@45c. is quoted. From Philadelphia the rate is 50@60c., and from Baltimore 55c.

The retail trade has revived, and the dealers are all fairly busy. They are all well stocked.

### Buffalo. Sep. 3.

(From Our Special Correspondent.)

The retail dealers will not advance the price of anthracite coal this month. In consequence of the extended territory supplied by the natural gas fuel companies, it was not deemed advisable to increase the cost of coal, as it might induce a further laying of pipes. The demand has been already much curtailed by the substitution of this fuel for domestic and other purposes.

Wholesale prices of anthracite are as follows: On cars, per gross ton, $4 50 for grate and $4.60 for stove, egg and chestnut; free on board per gross ton, $4.80 for grate, and $4.90 for egg, stove and chestnut.

Bituminous coal is quiet at unvaried quotations, and these are really nominal, as buyers are met by sellers on all transactions. The supply is fully adequate to all requirements of the trade.

Lake freights for coal are dull and weak; very many vessels leaving light, as the upper lake ports are stocked up largely with anthracite. We note a 10c. decline to Duluth, Superior, Milwaukee and Chicago, and 5c. to Toledo. The rates were 50@40c. to Chicago and Milwaukee; 50c. to Portage, Racine and Menominee; 55c. to Kenosha; 40c. to Saginaw and Marquette; 30c. to Duluth and Superior; 35c. to Marine City; 25c. to Toledo and Detroit; 25c. to Bay City; 50c. to Lake Linden, and 50c. to Houghton.

The quantity of coal shipped hence by lake westward from August 7th to September 2d, both days inclusive, aggregated 50,380 net tons, distributed about as follows: 18,100 to Chicago, 13,740 to Milwaukee, 6,600 to Duluth, 650 to Toledo, 700 to Gladstone, 600 to Detroit, 1,220 to Houghton, 1,600 Superior, 400 to Kenosha, 200 to Bay City, 900 to Racine, 1,050 to Marquette, 750 to Menominee, 1,580 to Saginaw, 1,000 to Portage, and 1,900 to Lake Linden.

Canal movements for the fourth week in August: Receipts, none; shipments, 965 net tons.

Col. J. H. Horton, the general sales agent of the Lehigh Valley Coal Company, is talked of as the Republican nominee for Mayor of this city at the coming election.

Mr. Walter J. Dunham, the traveling passenger agent of the Lehigh Valley Railroad, in this city, has resigned. He will engage in the anthracite and bituminous coal trade with Mr. James B. Donnelly, of Oswego.

*Statistical:* Railroad receipts and shipments at this port of coal not reported by request. Receipts of coal by lake thus far this season, none. Shipments by lake westward for month of August, 289,660 net tons, as compared with 269,900 tons in 1890 and 378,920 tons in 1889; for season to September 1st, 1,433,910 net tons, as compared with 1,111,190 tons in 1890, and 1,297,800 tons in 1889. The receipts of coal by canal for the month of August, 144 net tons, as compared with 7,966 tons in 1890, and 11,962 tons in 1889; the shipments, 3,072 net tons, as compared with 2,658 tons in 1890, and 2,231 tons in 1889. Total receipts by canal of coal this season, 625 net tons, as compared with 16,146 tons in 1890, and 42,910 tons in 1889; the shipments, 19,921 net tons, as compared with 6,148 tons in 1890, and 5,174 tons in 1889. The aggregate shipments by lake of coal this year to September show an increase of 332,720 net tons as compared with 1890, and 136,060 tons as compared with 1889. The rates of freight on coal hence to points named during August were as follows: 50c. to Chicago and Milwaukee; 40c. to Duluth, Washburn and Saginaw; 30c. to Toledo and 25c. to Detroit. A year since the rate to Chicago was 60c. and 40c. to Duluth and Lake Superior ports.

The shipments of coal by lake from Buffalo thus far this season to September 1st were distributed about as follows:

| To | Net tons | To | Net tons. |
|---|---|---|---|
| Chicago | 533,030 | Toledo | 36,197 |
| Milwaukee | 354,615 | Duluth | 126,410 |
| Ludington | 1,117 | Kincardine | 900 |
| Put-in-Bay | 250 | Escanaba | 1,980 |
| Kelly Island | 510 | Menominee | 6,170 |
| Serpent River | 420 | Port Rowan | 65 |
| Perry Sound | 110 | Amherstburg | 530 |
| Lake Linden | 2,980 | Green Bay | 22,770 |
| Owen Sound | 1,000 | Saginaw | 19,815 |
| Sandusky | 200 | Depere | 1,210 |
| Port Arthur | 1,580 | Detroit | 9,560 |
| Maustown | 1,350 | Alpena | 1,030 |
| Romney | 4 | Washburn | 5,290 |
| Gladstone | 16,270 | Marinette | 1,510 |
| Sheboygan | 12,680 | Marquette | 15,290 |
| Houghton | 4,320 | Huron, O | 300 |
| Sault Ste. Marie | 2,030 | Menistique | 60 |
| St. Clair | 600 | Mackinaw | 150 |
| Superior | 108,810 | Marine City | 350 |
| Racine | 33,460 | Pt. Huron | 650 |
| Kenosha | 8,210 | Ashland | 6,150 |
| Sheboygan | 1,350 | Bay City | 5,760 |
| Windsor | 680 | Sundry places by vessels from Tonawanda not reporting at custom-house at this port | 69,712 |
| Portage | 2,350 | | |
| Pt. Burwell | 30 | | |
| Bay Mills | 600 | | |
| Hancock | 2,285 | | |
| Fort William | 10,460 | | |
| Traverse City | 350 | | |

### Chicago. Sept. 3.

(From Our Special Correspondent.)

The cool weather which prevailed during the past week has certainly had a most beneficial effect on the market, and buying has been greatly stimulated. There is quite a good deal of inquiry from all points west and northwest, and orders are much more frequent. The usual scarcity of cars is forcibly brought to notice. It is the only drawback to a largely increased business. Consumers are taking coal freely, and dealers are drawing heavily on the stocks here. Large amounts of coal were contracted for at the low prices ruling last month, and as yet there is no appreciable effect on the market resulting from the action of the shippers' advancing prices, which took effect September 1st. There is at present very little doubt that values will strengthen from now on, providing there is no let up in the demand or other drawbacks at this time not thought of. The season is growing apace, and a sharp spell of vigorous buying would tend to stiffen prices, which as yet are entirely unchanged from those of a week ago. Retailers are selling to consumers just as freely at $5.50@$5.60, and the former are replenishing stock at $5 or less from wholesalers. The movement of coal to the country is greatly increasing.

With regard to bituminous there is little change to note from a week ago. Trade is good, but not of sufficient volume to justify any advance, as stocks are abundant. The reported sale of the Springfield mines in this State to a syndicate of English capitalists will not influence the price of soft or Illinois coal. Their yearly output is some 800,000 tons, and is mostly used by railroads; it is poor in quality and cheap in price.

Coke is in fair demand and abundant supply, but prices are no stronger than a week ago.

Prices of anthracite per ton of 2,000 pounds f. o. b. Chicago are: Lehigh lump, $6.75; large egg, $5; small egg, range, and chestnut, $5. Retail prices per ton are: Large egg, $6; small egg, range, and chestnut, $6.

Prices of bituminous per ton of 2,000 pounds f. o. b. Chicago are: Pittsburg, $3.25; Hocking Valley, $3; Youghiogheny, $3.40; Indiana block, $2.40@$2.50; Illinois block, $1.90@$2.

**Coke.**—Connellsville, 72-hour, per ton f. o. b. Chicago, $5.05; crushed, $4.75; Walston, $5; New River, $5; West Virginia, $4.25@$4.50.

### Pittsburg. Sept. 3.

(From our special correspondent.)

**Coal.**—The outlook for the local coal trade is all that could be desired. The announcement of another advance in natural gas has forced thousands to return to coal; besides information.

said to be reliable; has been received from the gas wells of the Philadelphia Company that is alarming, so far as supply of gas is concerned. At the Murraysville field, in 1884, the pressure was 540 lbs.; last winter it was 48 lbs.; to-day it is 10 lbs. The shortage is about the same at other points. Pittsburg before the winter is over will be the smoky city that it formerly was. Coal is now sold at Pittsburg at retail at 8½c. per bushel.

There are a limited number of miners at work in the Pools. As soon as the empties are loaded the mines will be closed until the fall trade opens.

**Connellsville Coke.**—There was a decrease in shipments of several hundred cars during the week. The coke market is still in fair condition notwithstanding decrease in shipments. The operators cannot explain the falling off except by the depression in the iron industry. A brisk fall trade is still anticipated, however, and operators are making preparations for it. The works continue to operate irregularly. Frick's plants and a number of independent concerns will run four and five days per week.

The McClure, Rainey and Southwest firms will, however, make the usual run of six days. There is no stagnation in the oven building line and it goes on with as much vigor as ever. Shipping facilities are in excellent shape. Shipments last week were as follows: Points west of Pittsburg, 3,193 cars; to points east of Pittsburg, 830 cars; to Pittsburg and river points, 2,150 cars; total, 6,175 cars. Shipments previous week, 6,680 cars. Prices and freights are unchanged.

### FREIGHTS.

**From Port Richmond to:** Alexandria, †85c.; Bangor, 60c.; Boston, 60@75c.; Gloucester, 70c.; Portland, *55c.; Portsmouth, *70c.; Providence, *50@75c.; New York, †90c.; Norfolk, 60c.; Salem, 75c.; Savannah 65@70c.; Washington, †85c.; Richmond, 70c.

*And discharging.
†Alongside.

## METAL MARKET.

NEW YORK, Friday Evening, Sept. 4.

**Prices of Silver Per Ounce Troy.**

| Aug. | Sterling Exch'ge. | Lond'n Pence. | N. Y. Cts. | Sept. | Sterling Exch'ge. | Lond'n Pence. | N. Y. Cts. |
|---|---|---|---|---|---|---|---|
| 29 | 4.85½ | 45 1/16 | 97¾ | 2 | 4.85 | 45 1/16 | 97⅞ |
| 31 | 4.85 | 45 1/16 | 97¾ | 3 | 4.85 | 45 1/16 | 97⅞ |
| Sept. 1 | 4.85 | 45 1/16 | 97¾ | 4 | 4.85 | 45 | 97¾ |

The market has been quiet and steady with no unusual features. The demand for India has not yet sprung up, but is likely during the autumn to absorb some of our silver.

The United States assay office at New York reports the total receipts of silver for the week to be 96,000 ounces.

### Government Silver Purchases.

WASHINGTON, D. C. (By telegraph.)—The Treasury Department purchased to-day 878,000 ounces fine silver at prices ranging from .9882 to .9825.

### Silver Bullion Certificates

| | Price. H. | Price. L. | Sales |
|---|---|---|---|
| Aug. 29 | 98 | 98 | 67,000 |
| Aug. 31 | 98¼ | 98 | 148,000 |
| Sept. 1 | 98¼ | 98⅞ | 133,000 |
| Sept. 2 | 98¼ | 98⅛ | 135,000 |
| Sept. 3 | 98¼ | 98⅛ | 37,000 |
| Sept. 4 | 98⅛ | 98⅛ | 9,000 |
| Total sales | | | 529,000 |

### Coinage at the Mints of the United States.

The following statement shows the coinage executed at the mints of the United States during the month of August, 1891.

| Denominations. | Pieces. | Value. |
|---|---|---|
| Double eagles | 83,000 | $1,660,000 |
| Eagles | 12,000 | 120,000 |
| Half eagles | 12,000 | 60,000 |
| Total gold | 107,000 | $1,840,000 |
| Standard dollars | 1,180,000 | $1,180,000 |
| Dimes | 5,840,000 | 584,000 |
| Total silver | 7,020,000 | $1,764,000 |
| Five cents | 1,484,000 | $74,200 |
| One cent | 4,020,000 | 40,200 |
| Total minor | 5,504,000 | $114,400 |
| Total coinage | 12,631,000 | $3,718,400 |

### Domestic and Foreign Coin.

The following are the latest market quotations for American and other coin:

| | Bid. | Asked. |
|---|---|---|
| Trade dollars | $ .76 | $ .78 |
| Mexican dollars | .76½ | .77½ |
| Peruvian soles and Chilian pesos | .73 | .74 |
| English silver | 4.84 | 4.88 |
| Five francs | .93 | .95 |
| Victoria sovereigns | 4.84 | 4.88 |
| Twenty francs | 3.86 | 3.90 |
| Twenty marks | 4.74 | 4.76 |
| Spanish doubloons | 15.55 | 15.70 |
| Spanish 25 pesetas | 4.78 | 4.83 |
| Mexican doubloons | 15.50 | 15.70 |
| Mexican 20 pesos | 19.50 | 19.90 |
| Ten guilders | 3.96 | 4.00 |

### Foreign Bank Statements.

The governors of the Bank of England at their weekly meeting on Thursday made no change in its minimum rate of discount, which remains at 2½%. In the week the bank lost £214,000 bullion, and the proportion of reserve to liabilities was lowered from 45·77% to 45·29%, against a reduction from 45·17% to 44·90% in the corresponding week last year, when its discount rate was left unchanged at 4%. On the 3d inst. the bank gained £18,000 bullion on balance. The weekly statement of the Bank of France shows a decrease of 4,825,000 francs gold and 1,000,000 francs silver. That of the Imperial Bank of Germany showed a loss in specie of 8,820,000 marks.

**Copper.**—There has been a rather large business doing and prices throughout are quite firm, especially for Lake copper, for which a good demand has been noticed, the and Calumet and Hecla Companies holding out firmly for 12½c. has steadied the market considerably. Some inferior brands of Lake copper from first hands have been obtainable at a slight concession, and ingot copper in store here in New York is still to be had at about 12.35c. Of casting copper only a very little appears to be available, and producers are thus enabled to get comparatively high prices, and we have to quote, according to quantity, 11⅝@11¾c. Some sales of Arizona pig copper for export have again been made, but terms are not yet known. The shipments of all sorts of copper from this port continue very heavy indeed, and are at last telling on statistics in Europe, which, according to cables received show an increase for the second half of August, of over 1,000 tons, principally owing to arrivals of American copper. Nothing new comes from the Anaconda mine, which is still closed down.

From Europe a steady demand is reported, but the increase in statistics has not failed to influence the market adversely, and prices for G. M. B.'s gave way, the worst of the week being £52 2s. 6d. @ £52 5s. for spot, and 10s. higher for three months, to-day's prices.

The exports of copper from the port of New York during the past week were as follows:

| | | | |
|---|---|---|---|
| To Antwerp— | Copper. | Lbs. | |
| S. S. Westernland | 68 pigs | 22,504 | $ 2,800 |
| To Bordeaux— | Copper. | Lbs. | |
| S. S. Toucarville | 180 casks | 225,000 | 30,000 |
| To Rotterdam— | Copper. | Lbs. | |
| S. S. Obdam | 627 pigs | 168,222 | $19,000 |
| " " | 45 casks | 56,250 | 7,500 |
| " " | 1,561 cakes | 250,788 | 31,348 |
| To Liverpool— | Copper Matte | lbs. | |
| S. S. Wisconsin | 2,313 bags | 257,300 | $29,000 |
| To Liverpool— | Copper. | Lbs. | |
| S. S. Cufic | 90 casks | 100,000 | $12,500 |
| To Havre— | Copper. | Lbs. | |
| S. S. La Champagne | 756 pigs | 232,349 | |
| To Hamburg— | Copper. | Lbs. | |
| S. S. Marsala | 393 plates | 44,807 | $5,200 |
| " " | 215 pigs | 56,100 | 7,000 |
| " " | 45 casks | 56,250 | 7,500 |
| " " | 4 bags matte | 450 | 30 |

**Tin.**—Tin also has been dealt in more largely, and while consumers have not been doing much good trading was noticeable on the Metal Exchange, prices varying from 20@20·10c. We have again to report heavy arrivals during the week past, but the bulk of the shipments on the way and near at hand is now in. Shipments from the East direct to this country during the second half of August amounted to only 225 tons. The market closes somewhat firmer, and we quote for spot 20·25c.: September, 20·25c.; October, 20·30c.; November, 20·30c.

The English market was rather dull and prices gave way in consequence of realizing on spot tin. There also is a little more firmness shown, closing prices being £91 12s. 6d. spot, £91 17s. 6d. forward.

**Lead.**—Lead has been very firm, and a large business has been done. It is estimated that fully 1,500 tons changed hands at the gradually hardening prices, and the market closes at its best, 4·50@4·55c. The Omaha & Grant Company is again working at full capacity, but this fact has not influenced the market at all. We have repeatedly pointed out that there are no stocks anywhere, with the exception of one lot held in store in New York, and, consequently, any demand larger than the present will have a hardening tendency as far as prices are concerned, especially as there are no signs of an increased production.

The English market is dull at £11 2s. 6d. for Spanish, and £12 7s. 6d. for English lead.

*Chicago Lead Market.*—Messrs. Everett & Post telegraph us as follows: "The market has been fairly active here, and some 700 tons or 800 tons have changed hands at 4·30c. to 4·35c., according to brands and delivery. The closing is firm at 4·35c. asked."

*St. Louis Lead Market.*—The John Wahl Commission Company telegraphs us as follows: "Lead is slowly advancing with very moderate offerings and reasonably good demand. Closing sales were made at 4·35c."

**Spelter.**—Spelter is the only metal on the list remaining dull and depressed; quotations still are about 5@5·05c., but buyers can usually get an advantage when they are actually in the market. The English market is unchanged, at the figures last mentioned.

**Antimony** is dull, and if anything, prices have again slightly given way. We have to quote Hallett's, 10c.; L. X., 10¾c., and Cookson's, 11¾c.

**Nickel** is again a very scarce article, and orders for prompt shipment, which have been in the market, have not yet been filled. We quote 68@70c., but only nominally.

**Quicksilver.**—The market is quiet but steady. New York prices have advanced to $43@$43.50, while London quotations have declined to £7 7s. 6d.

Receipts of quicksilver at San Francisco, Cal., for five half years ending June 30 compare as follows: 1891, 6,415 flasks; 1890, 6,237 flasks; 1889, 8,344 flasks; 1888, 11,143 flasks; 1887, 11,636 flasks.

Exports from San Francisco, Cal., by sea have been as follows:

| | Flasks. | Value. |
|---|---|---|
| Mexico | 1,721 | $77,721 |
| New York | 170 | 7,190 |
| Central America | 87 | 3,691 |
| Japan | 80 | 3,753 |
| British Columbia | 3 | 149 |
| Total | 2,061 | $92,004 |
| Same time 1890 | 1,842 | 91,226 |
| " 1889 | 2,935 | 122,711 |

Total exports from San Francisco, Cal., for the first six months of the past five years thus compare:

| | Flasks. | Value |
|---|---|---|
| By sea, 1891 | 2,061 | $92,004 |
| By rail | 6,826 | 313,859 |
| Total | 8,889 | $4 5,863 |
| Same time 1890 | 3,092 | 151,634 |
| " 1889 | 5,810 | 230,692 |
| " 1888 | 7,796 | 310,775 |

Stocks in San Francisco are not large, and, according to advices from that city, the market is in good condition, with prospects of an improvement in prices.

## IRON MARKET REVIEW.

NEW YORK, Friday Evening, Sept. 4.

No radical change may be reported of this market; the same features that have characterized it for some time past prevail. There is, however, a more hopeful feeling in the trade. There has been a greater inquiry from various sources, which, although it has not resulted in sales, shows that consumers are commencing to use iron. The demand also has increased in some quarters, slightly, but encouragingly, in this market where dullness has reigned for so many months. Prices are firm.

**American Pig Iron.**—A description of the condition of this market involves a repetition of the reports published in this column for some weeks past. The higher grades of Northern iron are scarce, and the lower grades are not pressing on the market to any appreciable degree. Some Lehigh furnaces are sold well ahead and refuse to take new orders. There has been rather more inquiry during the week and sales have probably exceeded those of last week. Quotations are unchanged at: Northern, No. X, $17@$18; No. 2 X, $16@$16.50. Southern, No. 1, $16.50@$17.50; No. 2, $15.50@$16.50.

**Spiegeleisen and Ferro-manganese.**—The combination of foreign manufacturers has advanced the price of ferro-manganese, and importers quote $64.50; not much business is doing; even with the news of the impending advance, consumers bought but little. Spiegeleisen is unchanged and quiet at $27.50@$28 for 20%.

**Steel Rails.**—This market continues unchanged so far as dullness is concerned. Rumors that the sale of 3,000 tons reported in our last issue had been increased to 10,000 tons are not true. An option on 7,000 tons was given to the same party, but contract has not yet been signed. We hear of no other sales. We quote $30 at mill and $30.75 at tide water.

**Rail Fastenings.**—There has been some inquiry for fastenings, but no actual business. We quote: Spikes, $2.10@$2.15, according to deliveries; bolts and square nuts, 2·75@2·80c.; hexagonal nuts, 2·80@2·85c.; complete joints, iron and steel, according to weight.

**Tubes and Pipe.**—Business continues fair in this market. No change has been made on ruling discounts for carload lots, which are as follows: 52½% on butt black; 42½% on galvanized; 62½% on lap, black; 50% on lap, galvanized; boiler tubes under 3 ins. and over 6 ins., 55%; 3 ins. to 6 ins., 60%.

As stated in the ENGINEERING AND MINING JOURNAL of July 18th, a new company, to be known as the National Tube Works Company, has been incorporated under the laws of New Jersey. The details have been perfected. The officers of the new company are: E. W. Converse, president; David W. Hitchcock, vice-president; William S. Eaton, treasurer; P. W. French, secretary; E. C. Converse, general manager. All the officers are Boston men, and represent the old National Tube Works Company. The board of directors includes all of the above, and also Horace Crosby, who represents the Republic Iron Works of Pittsburg; W. J. Curtis, of the law firm of Sullivan & Cromwell, of New York; J. H. Flagler, of New York, and F. E. Sweetser, of Boston.

The old National Company was organized about 25 years ago. Among its founders were James Converse and Messrs Eaton and Hitchcock.

**Merchant Steel.**—A moderately good business is reported in this market. Quotations show no change from last week and we repeat them: R. Mushet's special, 48c.; English tool, 15c., net American tool steel, 7@8c.; special grades 13

@20c.; crucible machinery steel, 5c.; crucible spring, 3¾c.; open-hearth machinery, 2·50c.; open-hearth spring, 2·60c.; tire steel, 2·50c.; toe calks, 2·50c.; first quality sheet, 10c.; second quality sheet, 8c.

**Structural Iron and Steel.**—This market is in healthy condition. Manufacturers report a fairly good volume of business Quotations are: Universal plates, $2.20; bridge plates, $2.10; beams, $3.10.

**Old Material.**—Nothing is doing in old materials. Quotations are nominally: old iron tie rails, $20.50 @ $21.50; double-heads, $21.50 @ $22.50; wrought iron scrap, $19@$21.

**Chicago.** Sept. 3.

(From our Spectal Correspondent.)

Improvement in the iron trade generally seems to be gaining ground and becoming more apparent through the West, and indications now point to a greater activity during the fall and winter in all branches of the iron and steel industries. This opinion is based upon the exceedingly heavy traffic on all Western trunk lines, in some cases exceeding the capacity of the roads, which must eventually lead to a large demand for new cars, general track supplies and other railway material. Pig iron has been moving as it has done for several weeks past, though some improvement is noted for coke grades. In the Southern iron field more or less inconvenience is reported from poor car service. In finished iron, bars, plates, and sheets continue in good demand, and prices are now higher than a week ago. Steel beams, columns, and other structural shapes are in fair demand. All the plants of the Illinois Steel Company are running full, and steel rail orders, though not large, are in the aggregate satisfactory. The steel-cut nail trade is disappointing to makers, but the wire-nail business has been brisk, though some falling off is now noticed. Old material and scrap are dull.

**Pig Iron.**—For local coke iron there is an improved demand, buying is rather more active, and small and medium-sized quantities have sold more freely during the past week. Several 1,000-ton lots of No. 2 foundry are reported for scattered deliveries; and many consumers who thought they had covered their requirements are again in the market for supplies. One feature of the market is that many of the orders for Southern soft cokes, Nos. 1 and 2, from 100 tons to 300 tons, are for quick deliveries, and the short car supply is causing consumers no little inconvenience. Lake Superior charcoal is being held at higher figures by some of the larger furnace companies, and agents have been instructed to make no contracts under $17.50, and several quote nothing less than $18, but sales are made at lower figures. Under these circumstances car wheel makers are not buying as freely as they would if the market were firmer. Several good contracts from 500 to 1,000 tons are noted for Tennessee charcoal at satisfactory prices.

Quotations per gross ton f. o. b. Chicago are: Lake Superior charcoal, $17.25@$18; Lake Superior coke, No. 1, $15.25@$15.75; No. 2, $15@$15.25; No. 3, $14@$14.50; Lake Superior Bessemer, $17; Lake Superior Scotch, $17@$17.50; American Scotch, $17.75@$18.25; Southern coke, Foundry No. 1, $15.75; No. 2, $15.25; No. 3, $14.50; Southern coke, soft, No. 1, $15.50; No. 2, $14.50; Ohio silveries, No. 1, $18; No. 2, $17; Ohio strong softeners, No. 1, $18; No. 2, $17; Tennessee charcoal, No. 1, $18; No. 2, $17.50; Southern standard car wheel, $21@$21.50.

**Structural Iron and Steel.**—There is quite a good inquiry and much new business is in sight, although some of it may be postponed until next spring. Quotations for car lots f. o. b. Chicago are as follows: Angles, $2@$2.10; tees, $2.60@$2.70; universal plates, $2.3[illegible]@$2.45; sheared plates, $2.20@$2.30; beams and channels, $3.20.

**Merchant Steel.**—Further contracts have been placed by implement makers and demand for car loads for prompt shipment is now quite a feature. Tool steel continues in good demand. Tool steel, $6.75@$7 and upward; tire steel, $2.30@$2.50; toe calk, $2.50@$2.65; Bessemer machinery, $2.20@$2.30; Bessemer bars, $2@$2.10; open-hearth machinery, $2.60@$2.75; open-hearth spring, $2.75@$3; crucible spring, $3.75@$4.

**Plates.**—Warehouse and mill business are both of a very satisfactory character to agents and trade bears every promise of greatly increasing. Boiler tubes are very steady. Steel sheets, 10 to 14, $2.70@$2.80; iron sheets, 10 to 14, $2.60@$2.70; tank iron or steel, $2.50@$2.70; shell iron or steel, $3@$3.25; firebox steel, $4.25@$5.50; flange steel, $3.25@$3.40; boiler rivets, $4.25; boiler tubes, 2¾ in. and smaller, 55%; 3 to 6 in., 60%; 7 in. and upward, 55%.

**Steel Rails.**—Inquiries are coming in much more freely for heavy sections, and it is noteworthy that they are for larger amounts. Actual demand and shipments, though, are for medium-sized or small lots for quick delivery. An increased demand is expected during September. Eastern mills are selling carloads in this market at $33. Prices remain steady at $31.50@$32.50. Demand is light for fastenings. Regular quotations are: $1.95@$2 for steel and $1.85@$1.90 for iron; spikes at $2.20@$2.25 per 100 lbs. track bolts; hexagonal nuts, $2.85@$2.90.

**Galvanized Sheet Iron.**—Agents are doing a large business and find it difficult to keep up stock. We quote 67½% off on Juniata and 67½% and 5% off on charcoal.

**Black Sheet Iron.**—Some mills are advancing prices and an Ohio maker now quotes 3c. f. o. b. Chicago for No. 27 common, and is not at all anxious for large orders at that price. Most mill agents are selling at 2·95c., with a fair demand for October deliveries. Dealers quote 3·10c. for same gauge from stock.

**Bar Iron.**—Demand is now such that prices have been advanced fully $1 per ton, which coupled with the advance in freight may cause a further stiffening. Local mills quote 1·70@1·75c., the former being a flat rate for bar iron. Agents of Valley manufacturers are firm at 1·57½@1·60c. at mill, half extras. Jobbers have advanced their rates to 1·85@1·95c.

**Nails.**—Steel-cut nails are still irregular, and demand for mill lots is light. Factory price is $1.60@$1.65, 30c. average; Chicago dealers quote $1.75 from stock. Wire nails have been in excellent demand for quick shipment, but orders have fallen off on account of the advanced freight rates. Makers quote $2@$2.05 Chicago, and jobbers $2.10@$2.15 from store in small lots.

**Scrap.**—Values have receded from 50c. to $1 per ton on best grades, and the market is flat. Much of this depressed condition is due to the failure of a mill in this vicinity which was a large consumer, but it may start up again shortly. Dealers quote nominally: No. 1 railroad, $19; No. 1 forge $18.50; No. 1 mill, $14.50; fishplates, $21; axles, $23; horseshoes, $18.50; pipes and flues, $13; cast borings, $8; wrought turnings, $10.50; axle turnings, $13; machinery castings, $12; stove plates, $9; mixed steel, $11; coil steel, $14.50; leaf steel, $15.50; tires, $16.50.

**Old Rails and Wheels.**—Consumers' bids on iron rails are too low for acceptance by holders, offers of $22.50 being refused, though $22.75 might go through; asking price is $23. Steel rails are dull at $14@$16.50, and car wheels in fair inquiry at $16@$16.25 asked.

**Louisville.** Aug. 29.

(Special Report by HALL BROTHERS & Co.)

Since our last report there has been rather more inquiry for the lower grade of coke iron, and while there is no change in prices the feeling is somewhat more cheerful. We quote as follows:

**Hot Blast Foundry Irons.**—Southern coke, No. 1, $14.25@$14.50; No. 2, $13.50@$14; No. 3, $13@$13.25. Southern charcoal, No. 1, $16@$17; No. 2, $15.50@$16. Missouri charcoal, No. 1, $17@$17.50; No. 2, $16.50@$17.

**Forge Irons.**—Neutral coke, $12.50@$12.75; cold short, $12.25@$12.50; mottled, $11.75@$12.

**Car Wheel and Malleable Irons.**—Southern, standard brands, $19@$19.50; Southern, other brands, $17@$18. Lake Superior, $20@$21.

**Philadelphia.** Sept. 3.

(From Our Special Correspondent.)

**Pig Iron.**—September opens with a much better demand for pig iron in all grades than has been seen for some time past. Prices, however, are at the lowest possible point. If concessions were made from quoted rates, large orders could be had, but at the extremely low prices ruling, business is not sought for in large lots. There is plenty of iron to be had, however, at low prices, such as $14, $15.50 and $16.50 for the leading grades. We quote: Pennsylvania No. 1, $17.50@$18; No. 2 $16.25@$17; Southern No. 1, $16.50@$17.25; No. 2, $15.50@$16; grey forge, $14.25@$14.75.

**Foreign Material.**—Quotations on ferromanganese are held at $64.50, and there is some prospect of business.

**Muck Bars.**—It is hard to quote prices at this time on muck bars, as everything in regard to them is in an unsatisfactory condition. Some large buyers say they are obtaining good bars at $26.50, while sellers in most instances offer at $26.75, and some few hold at $27. Very little business is being done.

**Steel Billets.**—There is a little more doing in the steel billet market this week, but at unsatisfactory prices. The outlook for the near future is for more activity, but at extremely low figures. Quotations are all the way from $27 to $27.75.

**Skelp Iron.**—There is still not much of a demand for skelp iron, although several small lots have been sold during the past week. Quotations are 1·70@1·75c. delivered, but it is thought a trifle better than this can be done in some instances.

**Bar Iron.**—There is a little more business presenting itself in bar iron, although there is not a large demand by any means. Quotations are held generally at 1·65@1·70c. at interior points, and 1·70@1·75c. at seaboard. The greater portion of the business is done at the inside figure, and there does not seem to be much prospect of any improvement.

**Plate and Tank Iron.**—There are no large orders on hand at this time, and very little different than what was said last week can be noted. Mills seem to be kept steadily busy on small orders which continue to come in. Asking prices are about as usual, being 1·90@2c. for tank plates; refined, 2·20@2·30c.; flange, 3·20@3·30c.

**Sheet Iron.**—Light sheets are being called for in good-sized lots just now, and there is quite an improvement to note in sheets of all kinds. There are orders enough on hand for the present, and it is thought that mills have enough for the remainder of the year. Prices keep at old figures. Best refined, $3@$3.50; best soft steel, $3@4; best bloom, galvanized, discount, 67½%.

**Structural Material.**—There is no active demand at present for structural material, although prospects point to a better demand in the near future. Confidence in good fall and winter business is expressed on all sides. Angles remain at $2.05@$2.10; sheared plates, $2@$2.10; tees, $2.50@$2.60; beams and channels, $3.10.

**Wrought Iron Pipe.**—These is only a moderate demand for pipe to be noted, with prices unchanged. Nominal discounts: butt welded black, 52½%; butt welded galvanized, 42½%.

**Steel Rails.**—In the steel-rail trade we are able to note a much better outlook than for some time past, and it is thought that mills will soon be running to their fullest capacity. Quotations are $30 at mill for small lots.

**Old Rails.**—A little better feeling is shown today in old rails. Some few sales have been made. Quotations are $21.50@$22.50 for iron; steel, $17.50@18.50.

**Scrap.**—No. 1 Railroad, $20.50@$21.50, here. For delivery at mills, $21@$21.50. Best machinery, 14@15.

**Pittsburg.** Sept. 3.

(From Our Special Correspondent.)

**Raw Iron and Steel.**—We have to report a dull and unsatisfactory market with numerous buyers disposed to hold off or else purchase sparingly. Still, taken as a whole, sales show up reasonably well. On the other hand there seem to be some buyers who have an entirely different opinion and are making calculation to enter the market in the near future. We heard of one large firm that made offers to certain city furnaces for several thousand tons of Bessemer; so far as known the offers were declined. Iron men, without exception, report a largely increased inquiry.

While the volume of business is improving, prices, as yet, have not moved up. The stock of raw iron on hand is not large; still buyers can obtain all they require. Several city furnaces are still out of blast, which tends to keep down stocks and prevents accumulation. Several of the Mahoning and Shenango furnaces are employed on contracts made in June and July for fall delivery at prices ruling considerably above prices that govern the market at present. Of course these furnace men have a good thing as long as it lasts. From all we can learn the outlook for the fall trade is considered favorable, as stocks in the hands of consumers are known to be limited.

Bessemer iron seems a little firmer. Grey forge is steady at last week's prices. Steel slabs and billets are in good demand; sales for late deliveries show an advance; spot unchanged. Muck bar is steady, at unchanged prices. Ferro-manganese, domestic, is firmer. Steel bloom and rail ends are held at an advance for October and November. Skelp iron is firm, and advancing. New steel rails are held firmly at $30. No. 1 railroad scrap is held firmly at the advance noted. Spiegel declined further. Steel wire rods are firmer, and a shade higher.

*Coke Smelted Lake and Native Ores.*

| | |
|---|---|
| 3,500 Tons Bessemer, September to January | 15.80 cash. |
| 2 000 Tons Bessemer, Fall delivery | 15.75 cash. |
| 1,500 Tons Bessemer, October and November | 15.70 cash. |
| 1,500 Tons Bessemer | 15.80 cash. |
| 1,200 Tons Grey Forge, Sept., Oct. and Nov | 13.85 cash. |
| 1 000 Tons Grey Forge, October | 13.75 cash. |
| 1,000 Tons Bessemer, Sept. and Oct | 15.75 cash. |
| 1,000 Tons Grey Forge | 14.00 cash. |
| 1,000 Tons Bessemer | 15.50 cash. |
| 1,000 Tons Bessemer | 16.00 cash. |
| 500 Tons Grey Forge | 13.90 cash. |
| 500 Tons Grey Forge | 14.00 cash. |
| 500 Tons Bessemer, September | 15.75 cash. |
| 500 Tons Grey Forge, September and October | 13.80 cash. |
| 200 Tons Grey Forge | 14,00 cash. |
| 200 Tons No. 1 Foundry | 16.00 cash. |
| 150 Tons No. 1 Foundry | 16.50 cash. |
| 100 Tons No. 1 Foundry | 16.00 cash. |
| 100 Tons No. 1 Foundry | 16.00 cash. |
| 100 Tons No. 2 Foundry | 15.25 cash. |
| 100 Tons Silvery | 16.00 cash. |
| 100 Tons No. 1 Silvery | 16.50 cash. |

*Steel Slabs and Billets.*

| | |
|---|---|
| 2,500 Tons Steel Billets, at works | 25.25 cash. |
| 1,500 Tons Billets and Slabs, at works | 25.00 cash. |
| 1,500 Tons Nail Slabs, September | 25.25 cash. |
| 1,000 Tons Billets, October | 25.15 cash. |
| 1,000 Tons Nail Slabs | 24.85 cash. |
| 750 Tons Billets, September and October | 25.10 cash. |
| 500 Tons Billets, October | 25.25 cash. |
| 500 Tons Billets, at mill | 25.00 cash. |

*Muck Bars.*

| | |
|---|---|
| 1,500 Tons Neutral, Sept., Oct., and Nov | 26.60 cash. |
| 750 Tons Neutral [Oct. and Nov | 26.75 cash. |
| 600 Tons Neutral, Sept. and Oct | 26.60 cash. |
| 500 Tons Neutral, September | 26.50 cash. |

*Ferro-Manganese.*

| | |
|---|---|
| 120 Tons 80%, Domestic | 66.50 cash. |
| 50 Tons 80%, Domestic | 66.40 cash. |

*Bloom, Beam, Rail and C Ends.*

| | |
|---|---|
| 1,500 Tons September, October and November | 16.75 cash. |

*Skelp Iron.*

| | |
|---|---|
| 1,500 Tons Narrow Grooved | 170 4 m. |
| 1,000 Tons Sheared Iron | 190 4 m. |
| 500 Tons Wide Grooved | 175 4 m. |

*Steel Wire Rods.*

| | |
|---|---|
| 600 Tons American fives, Oct., Nov | 33.75 cash. |
| 400 Tons American fives, Dec | 34.25 cash. |
| 300 Tons American fives, Sept | 34.00 cash. |

*Scrap Material.*

| | |
|---|---|
| 250 Tons No. 1 R. R. Wrought Scrap, net | 20.50 cash. |
| 100 Tons Leap Steel, net | 21.00 cash. |
| 50 Tons Hammered Iron Axles, net | 27.50 cash. |
| 25 Tons Hammered Iron Axles, net | 28.00 cash. |

*Old Iron Rails.*

| | |
|---|---|
| 125 Tons American Tees | 23.50 cash. |

# NEW YORK MINING STOCKS QUOTATIONS.

## DIVIDEND-PAYING MINES.

| NAME AND LOCATION OF COMPANY. | Aug. 29. | | Aug. 31. | | Sept. 1. | | Sept. 2. | | Sept. 3. | | Sept. 4. | | SALES. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H. | L. | H. | L. | H. | L. | H. | L. | H. | L. | H. | L. | |
| Adams, Colo. | | | | | | | | | | | | | |
| Alice, Mont. | | | | | | | | | | | | | |
| Aspen, Nev. | | | | | | | | | | | | | |
| Atlantic, Mich. | | | | | | | | | | | | | |
| Bassick | | | | | | | | | | | | | |
| Belle Isle, Nev. | | | | | | | | | | | | | |
| Bodie Cons., Cal. | | | | | | | | | | | | | |
| Bos. & Mont., Mont | | | | | | | | | | | | | |
| Breece, Colo. | | | | | | | | | | | | | |
| Bulwer, Cal. | | | | | | | | | | | | | |
| Caledonia, S. Dak. | | | | | | | | | | | | | |
| Catalpa | | | | | | | | | | | | | |
| Chrysolite, Colo. | | | | | | | | | | | | | |
| Colorado Central, Colo. | | | | | | | | | | | | | |
| Commonwealth, Nev. | | | | | | | | | | | | | |
| Comstock T. bonds, Nev. | | | | | | | | | | | | | |
| " scrip., Nev. | | | | | | | | | | | | | |
| Cons. Cal. & Va., Nev. | | | | | | | | | | | | | |
| Crown Point, Nev. | 1.80 | | | | | | | | | | 1.65 | | 300 |
| Deadwood, Dak. | | | | | | | | | | | | | |
| Eureka Cons., Nev. | | | | | | | | | | | | | |
| Father de Smet, S. Dak. | | | | | | | | | | | | | |
| Franklin, Mich. | | | | | | | | | | | | | |
| Freeland, Colo. | | | | | | | | | | | | | |
| Gould & Curry, Nev. | 1.75 | | 1.70 | | | | | | | | | | 200 |
| Granite Mountain, Mont. | | | | | | | | | | | | | |
| Hale & Norcross, Nev. | | | | | 1.85 | | | | | | 1.75 | | 300 |
| Homestake, Dak. | | | | | | | | | | | | | |
| Horn-Silver, Utah | 3.50 | | | | | | | | | | | | 100 |
| Independence, Nev. | | | | | | | | | | | | | |
| Iron Silver | | | | | | | | | | | | | |
| Leadville Cons., Colo. | | | | | | | .12 | | .12 | | | | 500 |
| Little Chief, Colo. | | | | | | | | | | | | | |
| Martin White, Nev. | | | | | | | | | | | | | |
| Mono, Cal. | | | | | | | | | | | | | |
| Mt. Diablo, Nev. | 2.30 | | | | 2.30 | | | | | | | | 200 |
| Navajo, Nev. | | | | | | | | | | | | | |
| N. Belle Isle, Nev. | | | | | | | | | | | | | |
| Ontario, Utah | | | | | | | | | | | | | |
| Ophir, Nev. | 3.85 | | | | 3.75 | | | | 3.90 | | 3.75 | | 575 |
| Osceola, Mich. | | | | | | | | | | | | | |
| Plymouth, Cal. | | | | | 2.00 | | | | | | | | 100 |
| Quicksilver, Pref., Cal. | | | | | | | | | | | | | |
| " Com., Cal. | | | | | | | | | | | | | |
| Quincy, Mich. | | | | | | | | | | | | | |
| Robinson Cons., Colo. | | | | | | | | | .35 | | .35 | | 1,363 |
| Savage, Nev. | | | | | | | | | | | | | |
| Sierra Nevada, Nev. | | | 2.35 | | | | | | | | | | 100 |
| Silver Cord, Colo. | | | | | | | | | | | .20 | | 300 |
| Silver King, Ariz. | | | | | | | | | | | | | |
| Silver Mg. of L. V., N.M. | | | | | | | | | | | | | |
| Small Hopes, Colo. | | | | | | | | | | | | | |
| Standard | | | | | | | | | | | | | |
| Yellow Jacket, Nev. | | | | | 1.60 | | 1.55 | | 1.55 | | | | 300 |

## NON-DIVIDEND-PAYING MINES.

| NAME AND LOCATION OF COMPANY. | Aug. 29. | | Aug. 31. | | Sept. 1. | | Sept. 2. | | Sept. 3. | | Sept. 4. | | SALES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H. | L. | H. | L. | H. | L. | H. | L. | H. | L. | H. | L. | |
| Alpha, Nev. | | | | | | | | | | | | | |
| Alta | .60 | | .60 | | .60 | | | | .60 | | .60 | | 600 |
| American Flag, Colo. | | | | | | | | | | | | | |
| Andes, Cal. | | | | | | | | | | | | | |
| Astoria, Cal. | .01 | | .01 | | .01 | | .02 | | .02 | | .02 | | 7,000 |
| Augusta, Ga. | | | | | | | | | | | | | |
| " bonds. | | | | | | | | | | | | | |
| Barcelona, Nev. | | | | | | | | | | | | | |
| Belmont, Cal. | .83 | | .83 | | .83 | | .84 | .83 | .85 | | | | 1,150 |
| Best & Belcher, Nev. | 3.60 | | 3.60 | | 3.30 | | | | 3.55 | | 3.40 | | 300 |
| Bonanza King, Cal. | | | | | | | | | | | | | |
| Brunswick, Cal. | | | .11 | | .11 | | .12 | | | | | | 2,500 |
| Bullion, Nev. | | | | | | | | | | | | | |
| Butte & Bost., Mont. | | | | | | | | | | | | | |
| Castle Creek, Idaho | | | | | | | | | | | | | |
| Chollar | 2.20 | | 2 20 | | 2.00 | | | | | | 2.00 | | 450 |
| Comstock T., Nev. | | | .17 | | .18 | .17 | .16 | | | | | | 3,100 |
| Con. Imperial, Nev. | | | | | | | | | | | | | |
| Con. Pacific, Cal. | | | | | | | | | | | | | |
| Crescent, Colo. | | | | | | | | | | | | | |
| Del Monte, Nev. | | | | | | | | | | | | | |
| El Cristo, Rep. of Col. | .50 | | | | | | | | .45 | | | | 200 |
| Emmett | .55 | | | | | | | | | | | | 100 |
| Exchequer, Nev. | | | | | | | .80 | | | | | | 200 |
| Hollywood, Cal. | | | | | | | | | | | | | |
| Huron, Mich. | | | | | | | | | | | | | |
| Justice, Nev. | | | | | | | | | | | | | |
| King & Pembroke, Ont. | | | | | | | | | | | | | |
| Lacrosse, Colo. | | | | | | | | | | | | | |
| Lee Basin, Colo. | | | | | | | | | | | | | |
| Mexican, Nev. | 2.35 | | 2.35 | | ‡2.50 | | | | 2.25 | | 2.25 | | 700 |
| Middle Bar, Cal. | .02 | | | | .02 | | .02 | | .02 | | .02 | | 1,150 |
| Monitor, Colo. | | | | | | | | | | | | | |
| Mutual S.& M.Co., Wash. | | | | | | | | | | | | | |
| Nevada Queen, Nev. | | | | | | | | | | | | | |
| N. Standard, Cal. | | | | | | | | | | | | | |
| N. Commonwealth, Nev. | | | | | | | | | | | | | |
| Occidental, Nev. | | | | | | | | | | | | | |
| Oriental & Mil., Nev. | | | | | | | | | | | .90 | .85 | 300 |
| Phœnix Lead, Colo. | | | | | | | | | | | | | |
| Phœnix of Ariz. | | | | | | | | | | | | | |
| Potosi, Colo. | 4.05 | | | | | | | | 3.15 | | 3.10 | | 400 |
| Rappahannock, Va. | | | | | | | | | | | | | |
| S. Sebastian, S. Sal. | | | | | | | | | | | | | |
| Santa Fe, N. M. | | | | | | | | | | | | | |
| Scorpion, Nev. | | | | | | | .44 | | | | | | 400 |
| Seg Belcher, Nev. | | | | | | | | | | | | | |
| Shoshone, Idaho. | | | | | | | | | | | | | |
| Silver Hill, Nev. | | | | | | | | | | | | | |
| Sullivan Con., Dak. | | | | | | | | | | | | | |
| Sutro Tunnel, Nev. | | | | | | | | | | | | | |
| Syndicate. | | | | | | | | | | | | | |
| Tornado Con., Nev. | | | | | | | | | | | | | |
| Union Cons., Nev. | | | | | | | | | | | 2 30 | | 200 |
| Utah, Nev. | .80 | | | | | | .75 | | .75 | | .75 | | 900 |

*Ex. dividend. †Dealt in in the New York Stock Ex. Unlisted securities. ‡Assessment paid. §Assessment unpaid. Dividend shares sold, 4,138. Non-dividend shares sold. 19,850. Total shares sold, 23,988.

# BOSTON MINING STOCK QUOTATIONS.

| NAME OF COMPANY. | Aug. 28. | | Aug. 29. | | Aug. 31. | | Sept. 1. | | Sept. 2. | | Sept. 3. | | SALES. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Atlantic, Mich. | 14.50 | 14.00 | | | | | 15.00 | | 16.00 | 15.75 | 16.00 | | 370 |
| Bodie, Cal. | | | | | | | | | | | | | |
| Bonanza Development | | | | | | | | | | | | | |
| Bost. & Mont., Mont. | 45.00 | | 45.50 | 45.00 | 47.00 | 45.25 | 49.00 | 46.75 | 50.00 | 48.00 | 49.50 | 48.25 | 5,960 |
| Breece, Colo. | | | | | | | | | | | | | |
| Calumet & Hecla, Mich. | 260 | | | | 260 | | | | 265 | | | | 66 |
| Catalpa, Colo. | | | | | | | | | | | | | |
| Central, Mich. | | | | | | | | | | | | | |
| Cœur d'Alene, Id. | | | | | | | | | | | | | |
| Con. Cal. & Va., Nev. | | | | | | | | | | | | | |
| Dunkin, Colo. | | | | | | | | | | | | | |
| Eureka, Nev. | | | | | | | | | | | | | |
| Franklin, Mich. | 17.00 | | 16.50 | | 17.00 | | 16.87 | | 17.75 | 17.25 | 17.50 | | 991 |
| Honorine, Utah | | | | | | | | | | | | | |
| Horn Silver, Utah | | | | | | | | | | | | | |
| Kearsarge, Mich. | 13.00 | | | | 14.00 | 13.50 | 15.50 | 14.75 | 16.75 | 15.50 | 15.50 | | 3,805 |
| Little Chief, Colo. | | | | | | | | | | | | | |
| Little Pittsburg, Colo. | | | | | | | | | | | | | |
| Minnesota Iron. | | | | | | | | | | | | | |
| Napa, Cal. | | | | | | | | | | | | | |
| Ontario, Utah | | | | | | | | | | | | | |
| Osceola, Mich. | 37.25 | 37.00 | | | 38.50 | 37.50 | 39.25 | 38.75 | 40.00 | 39.50 | 39.50 | | 2,230 |
| Quincy, Mich. | | | | | | | 110 | 109 | 115 | 110 | 112 | 110 | 325 |
| Ridge, Mich. | | | | | | | | | | | | | |
| Sierra Nevada, Nev. | | | | | | | | | | | | | |
| Silver King, Ariz. | | | | | | | | | | | | | |
| Stormont, Utah | | | | | | | | | | | | | |
| Tamarack, Mich. | 161 | 160 | | | 165 | | | | 170 | 169 | 170 | | 221 |
| Tecumseh, Mich. | | | | | | | | | 3.00 | | 3.13 | | 350 |

| NAME OF COMPANY. | Aug. 28. | | Aug. 29. | | Aug. 31. | | Sept. 1. | | Sept. 2. | | Sept. 3. | | SALES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Allouez, Mich. | 2.25 | | 2.00 | | 2.00 | | 2.13 | 2.00 | 2.63 | 2.50 | 2.50 | | 2,672 |
| Arnold, Mich. | | | 1.50 | | 1.75 | 1.50 | | | 1.87 | 1.75 | | | 1,800 |
| Aztec, Mich. | | | | | | | | | | | | | |
| Brunswick, Cal. | | | | | | | | | | | | | |
| Butte & Boston, Mont. | 16.75 | 16.50 | 17.25 | 16.75 | 17.25 | 17.00 | 18.50 | 17.00 | 20.00 | 19.13 | 19.25 | 18.50 | 6,569 |
| Centennial, Mich. | | | | | 17.25 | 17.00 | 18.75 | 17.00 | 22.00 | 20.00 | 20.75 | 18.50 | 5,037 |
| Comstock, T., Nev. | | | | | | | | | | | | | |
| Copper Falls, Mich. | | | | | | | | | | | | | |
| Crescent, Colo. | | | | | | | | | | | | | |
| Dana, Mich. | | | | | | | | | | | | | |
| Don Enrique, N. M. | | | | | | | | | | | | | |
| El Cristo, S. A. | | | | | | | | | | | | | |
| Hanover, Mich. | | | | | | | | | | | | | |
| Humboldt, Mich. | | | | | | | | | .50 | | | | 400 |
| Hungarian, Mich. | | | | | | | | | .25 | | | | 100 |
| Huron, Mich. | | | | | | | | | 1.00 | | 1.50 | | 325 |
| Mesnard, Mich. | | | | | | | | | | | | | |
| National, Mich. | | | 3.00 | | | | 3.37 | 3.00 | 3.50 | 3.25 | 3.75 | | 1,300 |
| Native, Mich. | | | | | | | | | | | | | |
| Oriental & M., Nev. | | | | | | | | | | | | | |
| Phoenix, Ariz. | | | | | | | | | | | | | |
| Pontiac, Mich. | | | | | | | | | | | | | |
| Rappahannock, Va. | | | | | | | | | | | | | |
| Santa Fe, N. Mex. | .50 | | | | .50 | | .55 | | .60 | .55 | 60 | .57½ | 4,500 |
| Shoshone, Idaho. | | | | | | | | | | | | | |
| South Side, Mich. | | | | | | | | | | | | | |
| Star, Mich. | | | | | | | | | | | | | |
| Washington, Mich. | | | | | | | | | | | | | |
| Winthrop, Mich. | | | | | | | | | | | | | |

Dividend shares sold, 14,318. Non-dividend shares sold, 22,703. Total shares sold, 37,011.

# COAL STOCKS.

| NAME OF COMPANY. | Aug. 29. | | Aug. 31. | | Sept. 1. | | Sept. 2. | | Sept. 3. | | Sept. 4. | | Sales. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H. | L. | H. | L. | H. | L. | H. | L. | H. | L. | H. | L. | |
| American Coal. | | | | | | | | | | | | | |
| Cambria Iron. | | | | | | | | | | | | | |
| Cameron Coal & I. Co. | 1 | | | | | | | | | | | | 100 |
| Ches. & O. R. R. | | | | | | | | | | | | | |
| Chic. & Ind. Coal R. R. | | | | | | | | | | | | | |
| Do. pref. | | | | | | | | | | | | | |
| Col. C. & I. | 36 | 35¾ | 36¼ | 35 | 36¼ | 34¼ | 35¾ | 35 | | | 36¼ | 35¼ | 3,900 |
| Col. C. & Hocking C. I. | | | | | 15 | | 17 | | 16½ | 16 | | | 450 |
| Consolidation Coal. | | | | | | | | | | | | | |
| Del. & H. C. | 133 | 131¾ | 135⅝ | 134¼ | 134⅞ | 133¼ | 136¼ | 133⅝ | 136⅛ | 135½ | 138⅛ | 135¼ | 11,749 |
| D., L. & W. R. R. | 141 | 139⅝ | 142¼ | 140¼ | 142¼ | 140⅝ | 142¼ | 140⅝ | 141⅛ | 140⅝ | 143¼ | 140¼ | 67,042 |
| Hocking Valley | 28⅝ | 28 | 28¼ | 28 | 28 | 27¾ | 28⅜ | 27 | 27⅝ | 27 | 27½ | | 3,550 |
| Hunt & Broad Top. | 23¾ | | 24 | | 24 | | 24 | | 24 | | | | 1,644 |
| Do. pref. | | | 47¼ | 46¾ | 47⅜ | 47½ | 47¼ | | | | | | 468 |
| Illinois C. & Coke Co. | | | | | | | | | | | | | |
| †Lehigh C. & N. | 49⅜ | 48¼ | 49⅝ | 48⅞ | 49¼ | 49¼ | 49¼ | 49 | | | | | 2,396 |
| †Lehigh Valley R. R. | 50 | | 50¼ | 50 | 50¼ | | 50¼ | 50 | 50¼ | 50 | | | 1,419 |
| Lehigh & Wilk. Coal. | | | | | | | | | | | | | |
| Mahoning Coal. | | | | | | | | | | | | | |
| Do. pref. | | | | | | | | | | | | | |
| Maryland Coal. | | | | | 21½ | | 21½ | | 21¼ | | | | 400 |
| Morris & Essex. | | | 144⅞ | | 144 | | | | 144 | | | | 110 |
| †New Central Coal. | | | 11¾ | | | | 11⅝ | | | | | | 300 |
| N. J. C. R. R. | 118¾ | 118⅛ | 120 | 118⅛ | 119 | 118⅛ | | | 118⅜ | 117⅜ | 120⅛ | 117⅜ | 7,880 |
| N. Y. & S. Coal. | | | | | | | | | | | | | |
| N. Y., Susq. & West. | 8¼ | 8¼ | 9 | 8⅝ | 9 | 8⅝ | 8⅝ | | 8¼ | | | | 3,320 |
| Do. pref. | 32¾ | 31 | 33⅜ | 32½ | 33 | | | | 32 | | 33⅝ | 32 | 4,315 |
| N. Y. & Perry C. & I. | | | | | | | 5 | | | | | | 200 |
| †Norfolk & West. R. R. | 16 | | 17½ | 17 | 17⅛ | 17 | | | | | | | 1,460 |
| †Do. pref. | 54 | 53½ | 55 | 54¼ | 53⅝ | 53¼ | 55 | 54⅜ | | | | | 2,355 |
| †Penn Coal. | | | | | | | | | | | | | |
| †Penn. R. R. | 54¼ | 53½ | 54 | 53⅝ | 54 | 53⅝ | 54 | 53⅝ | 53⅝ | 53¼ | | | 18,702 |
| †Ph. & R. R. R. | 34¼ | 33¾ | 35¾ | 34¾ | 35⅝ | 34⅝ | 36¼ | 35⅜ | 35¼ | 33¾ | 36¼ | 34¼ | 110,791 |
| Sunday Creek Coal. | | | | | | | | | | | | | |
| Do. Pref. | | | | | | | | | | | | | |
| Tennessee C. & I. Co. | 34½ | 32½ | 33½ | 32¾ | 33⅜ | 32 | 34 | 32⅝ | 33¼ | 32¼ | 33¾ | 33¼ | 10,635 |
| Do. pref. | | | | | | | | | | | | | |
| Westmoreland Coal. | | | | | | | | | | | | | |

† Par value, $50. Total shares sold, 252,886.

## Deadwood.

AUG. 29.

The following are the closing quotations:

| | Bid. | Ask'd. |
|---|---|---|
| Anna | | |
| Bullion | .07 | .08 |
| Carthage | | |
| Cora | .05 | .07½ |
| Double Standard | .10½ | .11 |
| Emmett | .01½ | .03 |
| Equitable | | |
| Florence | .01¾ | .03 |
| Golden Reward | .33 | .33½ |
| Harmony | .07½ | .09 |
| Hermit | | |
| Hesta A | | |
| Iron Hill | .17½ | .18 |
| Isidora | .25 | .30 |
| New Era | | |
| Maggie | | |
| Mikado | | |
| Mutual | | |
| Parson | .01 | .01½ |
| Rainbow | .02 | .03 |
| Retriever | .16 | .18 |
| Ross Hannibal | | |
| Ruby Bell | .10 | .12 |
| Ruby Wilkes | | |
| Seab'ry-Calkins | .03½ | .08 |
| Steward | .09 | .10 |
| Tornado | .13 | 15 |
| Troy | .01 | .02 |
| Uncle Sam | | .05 |

## Aspen.

Highest and lowest prices for the week ending Aug. 29:

| | | |
|---|---|---|
| Argentum Juniata | $1.50 | $1.50 |
| Aspen Deep Shaft | .08 | .10 |
| Aspen Favorite | | .10 |
| Best Friend | .24 | .25 |
| Bushwacker | .31 | .39 |
| Della S. | | |
| Little Annie | .23 | .23 |
| Mollie Gibson | 4.12½ | 4.15 |
| Nolan Creek | | .12 |
| Park, Mamie & Queen. | | |
| Pontiac. | | .12 |
| St. Joe & Mineral F'rm | .24 | .25 |

## San Francisco Mining Stock Quotations.

| NAMES OF STOCKS. | CLOSING QUOTATIONS. Aug. 28. | Aug. 29. | Aug. 31. | Sept. 1. | Sept. 2. | Sept. 3. |
|---|---|---|---|---|---|---|
| Alpha | | | | | | |
| Alta | .50 | .50 | | .50 | .50 | .50 |
| Belcher | | | | | | |
| Belle Isle | .35 | .55 | .30 | .40 | | .40 |
| Best & Bel. | 3.40 | 3.45 | 3.15 | 3.40 | 3.40 | 3.25 |
| Bodie | .60 | .55 | 50 | .55 | .50 | .50 |
| Bulwer | .20 | .25 | .20 | .20 | .20 | .20 |
| Chollar | 2.00 | 2.00 | 1.90 | 1.90 | 1.90 | 1.85 |
| Com'wealth | .25 | .25 | .25 | | .25 | .20 |
| Con. C. & V. | 6.25 | 6.37½ | 6.12½ | 6.50 | 6.62½ | 6.62 |
| Con Pacific | | | | | | |
| Crown Point | 1.60 | 1.60 | 1.50 | 1.55 | 1.60 | 1.50 |
| Del M'te, Nev. | | | | | | |
| Eureka C | | | | | | |
| Gould & C. | 1.60 | 1.65 | 1.60 | 1.60 | 1.60 | 1.60 |
| Hale & N. | 1.75 | 1.80 | 1.70 | 1.60 | 1.65 | 1.60 |
| M. White | | | | | | |
| Mexican | 2.20 | 2.20 | 2.15 | 2.15 | 2.10 | 2.10 |
| Mono | .25 | .25 | .30 | .35 | .25 | |
| Mt. Diablo | 2.15 | 2.15 | 2.15 | 2.15 | 2.15 | |
| Navajo | .30 | .30 | | .20 | .15 | |
| Nev. Queen | | | | | | |
| N. Belle Isle | .35 | | | .20 | .20 | .20 |
| N. Com'w'lth | | | | | | |
| Ophir | 3.70 | 3.55 | 3.60 | 3.75 | 3.75 | 3.60 |
| Potosi | 3.40 | | 3.40 | 3.40 | 3.10 | 2.90 |
| Savage | 2.50 | | 2.60 | 2.65 | 2.75 | 2.60 |
| Sierra Nev. | 3.00 | 3.10 | 3.10 | 3.15 | 3.00 | 2.95 |
| Union Con. | 2.25 | 2.35 | 2.15 | 2.20 | 2.20 | 2.15 |
| Utah | .70 | .70 | .70 | .70 | .65 | .65 |
| Yellow Jack. | 1.60 | 1.05 | 1.45 | 1.45 | 1.35 | 1.30 |

## DIVIDEND-PAYING MINES.

| | Name and Location of Company. | Capital Stock. | Shares. No. | Par | Assessments. Total levied. | Date and Amount of last | | | Dividends Total paid. | Date & amount of last. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Adams, s. L. C. | Colo. | $1,500,000 | 150,000 | $10 | * | | | | $600,000 | Aug. | 1891 .05 |
| 2 | Alice, s. | Mont. | 10,000,000 | 400,000 | 25 | * | | | | 945,000 | Aug. | 1891 .06¼ |
| 3 | Alma & Nel Wood., G | Idaho | 300,000 | 80,000 | 10 | * | | | | 60,000 | Jan. | 1889 .50 |
| 4 | Amador, G. | Cal. | 1,250,000 | 250,000 | 5 | * | | | | 31,250 | Aug. | 1890 .12½ |
| 5 | American Belle, S. & C. | Colo. | 2,000,000 | 400,000 | 5 | * | | | | 50,000 | April | 1891 .12½ |
| 6 | Americ'n & Nettie, G. & | Colo. | | 300,000 | | | | | | 150,400 | Nov. | 1889 .10 |
| 7 | Amy & Silversmith, S. | Mont. | | 341,419 | | | | | | 247,530 | Aug. | 1887 .12½ |
| 8 | Atlantic, C. | Mich. | 1,000,000 | 40,000 | 25 | $280,000 | April | 1875 | $1.00 | 700,000 | Feb. | 1891 1.00 |
| 9 | Argenta, S. | Nev. | 10,000,000 | 100,000 | 100 | 335,000 | July | 1889 | .10 | 40,000 | Feb. | 1890 .20 |
| 10 | Aspen Mg. & S., S. L. | Colo. | 2,000,000 | 200,000 | 10 | * | | | | 660,000 | May | 1891 .10 |
| 11 | Aurora, I. | Mich. | 2,500,000 | 100,000 | 25 | | | | | 255,000 | April | 1891 1.00 |
| 12 | Badger, S. | Ont. | 250,000 | 50,000 | 5 | * | | | | 37,500 | Mar | 1890 .25 |
| 13 | Bangkok Cora-Bell, S. | Colo. | 600,000 | 600,000 | 1 | * | | | | 44,510 | Aug. | 1890 .00½ |
| 14 | Belle Isle, S. | Nev. | 10,000,000 | 100,000 | 100 | 190,000 | Dec. | 1889 | .15 | 300,000 | Dec. | 1879 .25 |
| 15 | Belcher, S. G. | Nev. | 10,400,000 | 104,000 | 100 | 2,978,009 | Feb. | 1891 | .50 | 15,397,000 | April | 1876 1.00 |
| 16 | Bellevue, Idaho, S. L. | Idaho | 1,250,000 | 125,000 | 10 | 130,000 | Dec. | 1889 | .25 | 200,000 | Jan. | 1890 .10 |
| 17 | Bi-Metallic, S. G. | Mont. | 5,000,000 | 200,000 | 25 | | | | | 760,000 | April | 1891 .35 |
| 18 | Bodie Con., G. S. L. | Cal. | 10,000,000 | 100,000 | 100 | 550,000 | June | 1890 | .25 | 1,602,572 | April | 1885 .50 |
| 19 | Boston & Mont., G. | Mont. | 2,500,000 | 250,000 | 10 | * | | | | 520,000 | June | 1886 .15 |
| 20 | Boston & Mont., C. & | Mont. | 2,500,000 | 100,000 | 25 | * | | | | 1,950,000 | Aug. | 1891 1.00 |
| 21 | Breece, I. | Colo. | 5,000,000 | 200,000 | 25 | * | | | | 2,000 | Feb. | 1880 .01 |
| 22 | Brooklyn Lead, L. & | Utah | 500,000 | 50,000 | 10 | | | | | 127,000 | July. | 1887 .05 |
| 23 | Bulwer, G. | Cal. | 10,000,000 | 100,000 | 10 | 190,000 | Aug. | 1889 | .25 | 175,000 | Jan. | 1884 .10 |
| 24 | Bunker Hill & S. S. L. | Idaho | 3,000,000 | 300,000 | 10 | * | | | | 150,000 | Oct. | 1883 .06¾ |
| 25 | Caledonia, G. | Dak. | 10,000,000 | 100,000 | 100 | 505,000 | May | 1885 | .15 | 192,000 | Oct. | 1890 .08 |
| 26 | Calliope, S. | Colo. | 1,000,000 | 1,000,000 | | | | | | 140,000 | Jan. | 1891 .00¼ |
| 27 | Calumet & Hecla C. | Mich. | 2,500,000 | 100,000 | 25 | 1,200,000 | | | | 35,850,000 | June. | 1891 5 00 |
| 28 | Catalpa, S. L. L. | Colo. | 3,000,000 | 300,000 | 10 | * | | | | 270,000 | May | 1884 .10 |
| 29 | Centen'l-Eureka, S. L. | Utah | 1,500,000 | 30,000 | 50 | | | | | 352,500 | July. | 1891 2.00 |
| 30 | Central, C. | Mich. | 500,000 | 20,000 | 25 | 100,000 | Oct. | 1861 | .65 | 1,970,000 | Feb. | 1891 1.00 |
| 31 | Chrysolite, S. L. | Colo. | 10,000,000 | 200,000 | 50 | * | | | | 1,650,000 | Dec. | 1884 .25 |
| 32 | Clay County, G. | Colo. | 200,000 | 200,000 | 1 | * | | | | 40,000 | July. | 1891 .02 |
| 33 | Cœur D'Alene, S. L. | Idaho | 5,000,000 | 500,000 | 10 | | | | | 280,000 | Sept. | 1891 .02 |
| 34 | Colorado Central, S. L. | Colo. | 2,750,000 | 275,000 | 10 | * | | | | 406,250 | Aug. | 1889 .05 |
| 35 | Commonwealth, S. | Nev | 10,000,000 | 100,000 | 100 | 170,000 | Nov. | 1888 | .50 | 20,000 | Nov. | 1890 .20 |
| 36 | Confidence, S. L. | Nev. | | 24,960 | | 328,884 | May | 1890 | .75 | 199,680 | April | 1889 1.00 |
| 37 | Cons. Cal. & Va., S. G. | Nev. | 21,600,000 | 216,000 | 100 | 108,000 | Jan. | 1885 | .25 | 3,682,800 | Aug. | 1891 .50 |
| 38 | Contention, S. | Ariz. | 12,500,000 | 250,000 | 50 | | | | | ‡2,587,500 | Dec. | 1884 .25 |
| 39 | **Cop. Queen Con., C. | Ariz. | 1,400,000 | 140,000 | 10 | | | | | 210,000 | Feb. | 1889 .50 |
| 40 | Cortez, S. | Nev. | 1,500,000 | 300,000 | 05 | * | | | | 481,000 | Feb. | 1891 .46 |
| 41 | Crescent, S. L. G. | Utah | 15,000,000 | 300,000 | 25 | * | | | | 228,000 | Oct. | 1888 .03 |
| 42 | Crown Point, G. S. | Nev. | 10,000,000 | 100,000 | 100 | 2,425,000 | Sept. | 1889 | .5. | 11,598,000 | Jan. | 1875 2.00 |
| 43 | Cumberland, L. S. | Mont. | 5,000,000 | 500,000 | 10 | * | | | | 15,000 | Nov. | 1889 .03 |
| 44 | Daly, S. L. | Utah | 3,000,000 | 150,000 | 20 | | | | | 2,062,500 | Aug. | 1891 .25 |
| 45 | Deer Creek, S. G. | Idaho | 1,000,000 | 200,000 | 5 | * | | | | 20,000 | June | 1889 .05 |
| 46 | Deadwood-Terra, G. | Dak. | 5,000,000 | 200,000 | 25 | * | | | | 1,010,000 | Aug. | 1891 .05 |
| 47 | DeLamar, S. G. | Idaho | 2,000,000 | 400,000 | 5 | | | | | 72,000 | July. | 1891 .13 |
| 48 | Derbec B. Grav., G. | Cal. | 1,000,000 | 100,000 | 10 | 90,000 | Dec. | 1881 | .10 | 240,000 | Oct. | 1890 .10 |
| 49 | Dunkin, S. L. | Colo. | 5,000,000 | 200,000 | 25 | * | | | | 390,000 | Oct. | 1889 .05 |
| 50 | Dunstone, G. S. L. | Mont. | 1,000,000 | 200,000 | 5 | * | | | | 6,000 | Nov. | 1888 .03 |
| 51 | Eclipse, L. S. | Colo. | 100,000 | 100,000 | 1 | | | | | 20,000 | Nov. | 1887 .10 |
| 52 | Elkhorn, S. L. | Mont. | 1,000,000 | 200,000 | 5 | * | | | | ¶396,000 | June | 1891 1.00 |
| 53 | Enterprise, S. | Colo. | 100,000 | 40,000 | 10 | * | | | | 40,000 | May. | 1888 1.00 |
| 54 | Eureka Con., S. L. G. | Nev. | 5,000,000 | 50,000 | 100 | 550,000 | June | 1889 | .5. | 4,895,000 | Oct. | 1890 .25 |
| 55 | Evening Star, S. L. | Colo. | 500,000 | 50,000 | 10 | * | | | | 1,450,000 | Dec. | 1889 .25 |
| 56 | Father de Smet, G. | Dak. | 10,000,000 | 100,000 | 100 | 200,000 | Nov. | 1878 | 1.00 | 1,125,000 | Dec. | 1885 .20 |
| 57 | Franklin, C. | Mich. | 1,000,000 | 40,000 | 25 | 220,000 | June | 187 | | 1,046,000 | July. | 1851 2.00 |
| 58 | Freeland, S. G. | Colo. | 5,000,000 | 200,000 | 25 | * | | | | 190,000 | July. | 1886 .10 |
| 59 | Garfield Lt., G. S. | Nev. | 500,000 | 100,000 | 5 | | | | | 90,000 | April | 1888 .1.½ |
| 60 | Gould & Curry, S. G. | Nev. | 10,000,000 | 100,000 | 100 | 3,988,800 | Sept. | 189. | .25 | 3,826,000 | Oct. | 1870 10.00 |
| 61 | Grand Prize, S. | Nev. | 10,000,000 | 100,000 | 10. | 785,000 | Jan. | 189. | .3 | 495,000 | Mar. | 1884 .25 |
| 62 | Granite, S. L. | Idaho | 500,000 | 500,000 | 1 | * | | | | 28,400 | Oct. | 1889 .02 |
| 63 | Granite Mountain, S. | Mont. | 10,000,000 | 400,000 | 25 | | | | | 11,300,000 | Sept. | 1891 .25 |
| 64 | Green Mountain, G. | Cal. | 1,250,000 | 125,000 | 10 | * | | | | 212,000 | Nov. | 1881 .07½ |
| 65 | Hale & Norcross, G. S. | Nev. | 11,200,000 | 112,000 | 100 | 5,142,800 | April | 1889 | .5. | 1,822,000 | Aug. | 1888 .50 |
| 66 | Hecla Con., S. G. L. C. | Mont. | 5,000,000 | 30,000 | 50 | | | | | 1,950,000 | Aug. | 1891 .50 |
| 67 | Hel'a Mg. & Red, S. L. G. | Mont. | 3,315,000 | 663,000 | 5 | * | | | | 197,970 | July | 1886 .06 |
| 68 | Holmes, S. | Nev. | 10,000,000 | 100,000 | 100 | 370,000 | May | 1890 | .25 | 75,000 | April | 1886 .25 |
| 69 | Homestake, G. | Dak. | 12,500,000 | 125,000 | 100 | 200,000 | July | 1878 | 1.00 | 4,731,750 | Aug. | 1891 .10 |
| 70 | Honorine, S. L. | Utah | 500,000 | 250,000 | 2 | 37,500 | April | 1889 | .05 | 125,000 | Sept. | 1887 .05 |
| 71 | Hope, S. | Mont. | 1,000,000 | 100,000 | 10 | * | | | | 233,252 | April | 1888 .25 |
| 72 | Horn-Silver, S. L. | Utah | 10,000,000 | 400,000 | 25 | * | | | | 4,340,000 | June. | 1891 1.½ |
| 73 | Hubert, G. | Colo. | 1,000,000 | 1,000,000 | 1 | | | | | 247,000 | Dec. | 1889 .00½ |
| 74 | Idaho, G. | Cal. | 310,000 | 3,100 | 100 | | | | | 2,303,750 | July | 1891 3.0. |
| 75 | Illinois, S. | N. M. | 100,000 | 100,000 | 1 | * | | | | 45,000 | April | 1889 .20 |
| 76 | Iron Hill, S. | Dak. | 2,500,000 | 250,000 | 10 | 134,000 | July. | 1889 | .03 | 156,250 | Nov. | 1887 .0.½ |
| 77 | Iron Mountain, S. | Mont. | 500,000 | 500,000 | 1 | * | | | | 120,000 | Feb. | 1891 .05 |
| 78 | Iron-Silver, S. L. | Colo. | 10,000,000 | 500,000 | 20 | | | | | 2,500,000 | April | 1889 .20 |
| 79 | Jackson, G. S. | Nev. | 5,000,000 | 50,000 | 100 | 287,500 | Nov. | 188 | .3 | 60,000 | Jan. | 1891 .10 |
| 80 | Jay Gould, G. S. | Mont. | 2,000,000 | 40,000 | 5 | * | | | | 459,000 | May | 189. .04 |
| 81 | Kearsarge, C. | Mich. | 1,000,000 | 40,000 | 25 | 190,000 | Oct. | 188. | 1.0 | 80,000 | Jan. | 1890 2.00 |
| 82 | Kentuck, S. G. | Nev. | 3,000,000 | 30,000 | 100 | 417,43 | Dec. | 188 | .5 | 1,350,000 | Dec. | 1886 .10 |
| 83 | La Plata, S. L. | Colo. | 2,000,000 | 200,000 | 10 | * | | | | 610,000 | Sept. | 1882 .30 |
| 84 | Leadville Con., S. L. | Colo. | 4,000,000 | 400,000 | 10 | * | | | | 423,000 | April | 1887 .05 |
| 85 | Lexington, S. L. | Mont. | 4,000,000 | 40,000 | 100 | * | | | | 565,000 | Jan. | 1885 2.00 |
| 86 | Little Chief, S. L. | Colo. | 10,000,000 | 200,000 | 50 | * | | | | 820,000 | Dec. | 1890 .05 |
| 87 | Little Rule, S. | Colo. | 500,000 | 500,000 | 1 | | | | | 170,000 | July. | 1891 .02 |
| 88 | Mammoth, S. L. C. | Utah | 10,000,000 | 400,000 | 25 | 110,000 | | 188. | .25 | 960,000 | June | 1891 .10 |
| 89 | Martin White, S. | Nev. | 10,000,000 | 100,000 | 100 | 1,225,000 | Oct. | 189. | .25 | 140,000 | Dec. | 1886 .25 |
| 90 | Mary Murphy, S. G. | | 350,000 | 3,500 | 101 | * | | | | 175,000 | May. | 1888 5.00 |
| 91 | Matchless, S. L. | Colo. | 500,000 | 500,000 | 1 | * | | | | 15,000 | Feb. | 1890 .00½ |
| 92 | May Mazeppa, S. L. | Colo. | 1,000,000 | 100,000 | 1 | * | | | | 168,000 | July. | 1891 .01¼ |
| 93 | Minas Prietas, G. S. | Mex. | 1,000,000 | 100,000 | 10 | | | | | 350,000 | Dec. | 1890 .50 |
| 94 | Minnesota, C. | Mich. | 1,000,000 | 40,000 | 25 | 420,000 | April | 1888 | 1.00 | 1,820,000 | Mar. | 1876 |
| 95 | Mollie Gibson, S. | Colo. | 5,000,000 | 1,000,000 | 5 | * | | | | 550,000 | Sept. | 1891 .05 |
| 96 | Monitor, G. | S. Dak | 2,500,0 0 | 250,000 | 10 | | | | | 45,000 | Oct. | 1890 .03 |
| 97 | Mono, G. | Cal. | 50,000 | 50,000 | 10 | 760,000 | Sept. | 189. | .25 | 12,500 | Mar. | 1886 .25 |
| 98 | Montana, Lt., G. S. | Mont. | 3,300,000 | 660,000 | 5 | * | | | | 2,619,075 | June. | 1891 .12½ |
| 99 | Morning Star, S. L. | Colo. | 1,000,000 | 100,000 | 10 | | | | | 925,000 | April | 1891 .25 |
| 100 | Moulton, S. G. | Mont. | 2,000,000 | 400,000 | 5 | * | | | | 380,000 | Dec. | 1887 .07½ |
| 101 | Mount Pleasant, G. | Cal. | 150,000 | 150,000 | 1 | * | | | | 150,000 | Feb. | 1887 .30 |
| 102 | Mt. Diablo, S. | Nev. | 5,000,000 | 50,000 | 100 | 137,500 | June | 188. | 2.00 | 180,000 | Sept. | 1890 .40 |
| 103 | Napa, G. | Cal. | 700,000 | 100,000 | 7 | | | | | 420,000 | July. | 1891 .10 |
| 104 | Navajo, G. S. | Nev. | 10,000,000 | 100,000 | 100 | 500,000 | April | 189. | .15 | 229,950 | April | 1889 .10 |
| 105 | New California, G. | Colo. | 800,000 | 160,000 | 5 | * | | | | 48,800 | May. | 1886 .12½ |
| 106 | New Guston, S. | Colo. | 550,000 | 110,000 | 5 | * | | | | 785,000 | April | 1891 1.00 |
| 107 | N. Hoover Hill, G. S. | N. C. | 300,000 | 120,000 | 2½ | | | | | 30,000 | Dec. | 1885 .06¾ |
| 108 | Northern Belle, S. | Nev. | 5,000,000 | 50,000 | 100 | 425,000 | Jan. | 1891 | 8.00 | 2,400,000 | April | 1883 .50 |
| 109 | North Belle Isle, S. | Nev. | 10,000,000 | 100,000 | 100 | 390,000 | April | 188. | .2. | 230,000 | May | 1888 .50 |
| 110 | North Star, G. | Cal. | 1,000,000 | 100,000 | 10 | | | | | 300,000 | April | 1889 .50 |
| 111 | Ontario, S. L. | Utah | 15,000,000 | 150,000 | 100 | | | | | 12,125,000 | Aug. | 1891 .50 |
| 112 | Ophir, G. S. | Nev. | 10,000,000 | 100,000 | 100 | 4,210,64 | April | 189. | .50 | 1,595,800 | Jan. | 1890 1.00 |
| 113 | Original, S. C. | Mont. | 1,200,000 | 60,000 | 25 | * | | | | 138,000 | Jan. | 1889 .05 |
| 114 | Oro, S. L. G. | Colo. | 500,000 | 100,000 | 5 | | | | | 95,000 | Jan. | 1890 .25 |
| 115 | Osceola, C. | Mich. | 1,250,000 | 50,000 | 25 | 480,000 | April | 187 | 1.6. | 1,547,500 | July. | 1891 1.00 |
| 116 | Parrot, C. | Mont. | 1,800,000 | 180,000 | 10 | * | | | | 850,000 | May. | 1891 .10 |
| 117 | Peacock, S. G. C. | N. M. | 2,000,000 | 200,000 | 10 | * | | | | 60,000 | Nov | 1886 |
| 118 | Plumas Eureka, G. | Cal. | 1,406,25 | 140,62 | 10 | * | | | | 2,548,000 | Oct. | 1889 .37½ |
| 119 | Plymouth Con., G. | Cal. | 5,000,000 | 100,000 | 50 | * | | | | 2,200,000 | Feb. | 1888 .40 |
| 120 | Quicksilver, pref., Q | | 4,300,000 | 43,000 | 100 | * | | | | 1,720,16. | Jan. | 1891 1.50 |
| 121 | com., Q | Cal. | 5,700,000 | 57,000 | 100 | * | | | | 643,967 | July. | 1885 .40 |
| 122 | Quincy, C. | Mich. | 1,000,000 | 40,000 | 25 | 200,000 | Dec. | 188. | | 5,970,000 | Aug. | 1891 5.00 |
| 123 | Reed National, S. G. | Colo. | 500,000 | 500,000 | 1 | * | | | | 50,000 | Dec. | 189. .01 |
| 124 | Rialto, G. | Colo. | 300,000 | 300,000 | 1 | * | | | | 13,500 | July. | 1891 .0 ¾ |
| 125 | Richmond, S. L. | Nev. | 1,8 0,000 | 54,000 | 25 | | | | | 4,382,887 | Jan. | 1891 .62½ |
| 126 | Ridge, G. | Colo. | 200,000 | 200,000 | 25 | 219,53. | Mar. | 188 | .50 | 99,285 | Feb. | 188. .50 |
| 127 | Robinson Con., S. L. | Colo. | 10,000,000 | 200,000 | 50 | * | | | | 585,000 | Mar. | 1886 .05 |
| 128 | Running Lode, G. | Colo. | 1,000,000 | 1,000,000 | 1 | * | | | | 15,000 | June | 1891 .0½ |
| 129 | Savage, S. | Nev. | 11,200,000 | 112,000 | 100 | 6,604,000 | Nov. | 188. | .5. | 4,460,000 | June | 1869 3.00 |
| 130 | Sheridan, S. G. | Colo. | 300,000 | 3,000 | 100 | * | | | | 225,000 | Dec. | 189. 3.3.½ |
| 131 | Shoshone, G. | Idaho | 150,000 | 150,000 | 1 | | | | | 7,500 | April | 1883 .01 |
| 132 | Sierra Buttes, G. | Cal. | 2,225,000 | 122,500 | 10 | | | | | 1,492,557 | April | 1888 .12½ |
| 133 | Sierra Nevada, S. G. | Nev. | 10,000,000 | 100,000 | 100 | 6,296,910 | May | 189. | .5. | 102,000 | Jan. | 1871 1.00 |
| 134 | Sierra Nevada, S. L. | Idaho | 1,000,000 | 1,000,000 | 1 | * | | | | 40,000 | May. | 1889 .02 |
| 135 | Silent Friend. | Colo. | 500,000 | 500,000 | 1 | * | | | | 32.50 | April | 1891 .02½ |
| 136 | Silver Cord, S. L. G. | Colo. | 4,500,000 | 450,000 | 10 | | | | | 265,000 | April | 1889 10 |
| 137 | Silver King, S. | Ariz. | 10,000,000 | 100,000 | 100 | 130,000 | Nov. | 189. | .30 | 1,960,000 | July | 1887 .25 |
| 138 | Silver Mg. of L. V., S. L. | N. M. | 500,000 | 500,000 | 1 | * | | | | 375,000 | May | 1891 .05 |
| 139 | Small Hopes Con., S. | Colo. | 5,000,000 | 250,000 | 20 | | | | | 2,162,500 | Oct. | 189. .10 |
| 140 | Spring Valley, G. | Cal. | 200,000 | 200,000 | 1 | 50,000 | Oct. | 188 | .25 | 50,000 | Jan. | 1881 .25 |
| 141 | Standard, G. S. | Cal. | 10,000,000 | 100,000 | 100 | 100,000 | June | 188. | .50 | 3,595,000 | June | 1888 .05 |
| 142 | Stormont, S. | Utah | 500,000 | 500,000 | 1 | * | | | | 155,600 | Nov | 1881 .05 |
| 143 | St. Joseph, L. | Mo. | 1,500,000 | 150,000 | 10 | * | | | | 1,974,000 | Dec. | 188. .02 |
| 144 | Tamarack, C. | Ariz. | 1,250,000 | 50,000 | 25 | 520,00 | April | 188 | 3.00 | 2,093,000 | Aug. | 1891 4.00 |
| 145 | Tombstone, G. S. L. | Ariz. | 12,500,000 | 500,000 | 25 | * | | | | 1,250,000 | April | 1882 .10 |
| 146 | United Verde, C. | Ariz. | 3,000,000 | 300,000 | 10 | | | | | 127,500 | May | 1886 .10 |
| 147 | Viola Lt., S. L. | Idaho | 750,000 | 150,000 | 5 | | | | | 337,500 | Nov. | 1888 .37½ |
| 148 | Ward Con., S. | Colo. | 2,000,000 | 200,000 | 10 | | | | | 20,000 | Dec. | 1889 .05 |
| 149 | Woodside, S. L. | Utah | 100,000 | 100,000 | 10 | | | | | 25,000 | Oct. | 188. .25 |
| 150 | W. Y. O. D. | Cal. | 30,000 | 3,000 | 2 | 11,25. | Feb. | 189 | .10 | 4,500 | May. | 1891 .1.0 |
| 151 | Yankee Girl, S. | Colo. | 2,500,000 | 250,000 | 10 | | | | | 1,405,000 | April | 1891 .5. |
| 152 | Yellow Jacket, G. S. | Nev. | 12,000,000 | 120,000 | 100 | 5,508,00. | Mar. | 1889 | .50 | 2,184,000 | Aug | 1871 2.50 |
| 153 | Young America, G. | Cal. | | | | | | | | 175,000 | Ja n | 188. 1 0 |

## NON-DIVIDEND PAYING MINES.

| | Name and Location of Company. | Capital Stock. | Shares. No. | Par | Assessments. Total levied. | Date and am't of last. | | |
|---|---|---|---|---|---|---|---|---|
| 1 | Allegheny, S. | Colo. | $5,000,000 | 500,000 | $10 | * | | |
| 2 | Alliance, S. G. | Utah. | 100,000 | 100,000 | 1 | | | |
| 3 | Allouez, C. | Mich. | 2,000,000 | 80,000 | 25 | $120,000 | Feb. | 1891 .20 |
| 4 | Alpha Con., G. S. | Nev. | 8,000,000 | 80,000 | 100 | 737,000 | Jan. | 1890 .70 |
| 5 | Alta, S. | Nev. | 10,080,000 | 100,800 | 100 | 112,500 | Sept. | 1890 .25 |
| 6 | American Flag, S. | Colo. | 1,250,000 | 125,000 | 10 | 3,359,800 | Sept. | 1890 .50 |
| 7 | Amity, S. | Colo. | 250,000 | 250,000 | 1 | 300,000 | June | 1887 |
| 8 | Anchor S. L. G. | Utah. | 3,000,000 | 150,000 | 20 | | | |
| 9 | Angio-Montana, Lt. | Mont. | 600,000 | 120,000 | 5 | 410,000 | June | 1890 .20 |
| 10 | Astoria, G. | Cal. | 200,000 | 100,000 | 2 | | | |
| 11 | Barcelona, S. | Nev. | 5,000,000 | 200,000 | 25 | | | |
| 12 | Bechtel Con., G. | Cal. | 10,000,000 | 100,000 | 100 | 173,500 | | 1883 .10 |
| 13 | Belmont, G. | Cal. | 500,000 | 500,000 | 1 | * | | |
| 14 | Belmont, S. | Nev. | 5,000,000 | 50,000 | 100 | 735,000 | April | 1886 .10 |
| 15 | Best & Belcher, S. G. | Nev. | 10,080,000 | 100,800 | 100 | 2,279,275 | Aug. | 1890 .25 |
| 16 | Black Oak, G. | Cal. | 3,000,000 | 300,000 | 10 | * | | |
| 17 | Boston Con., G. | Cal. | 10,000,000 | 100,000 | 100 | 170,000 | Nov. | 1883 .25 |
| 18 | Bremen, S | N. M. | 5,000,000 | 500,000 | 10 | * | | |
| 19 | Brownlow, G. | Colo. | 250,000 | 250,000 | 1 | | | |
| 20 | Brunswick, G. | Cal. | 2,000,000 | 400,000 | 5 | * | | |
| 21 | Buckeye, S. L. | Mont. | 1,000,000 | 500,000 | 2 | | | |
| 22 | Bullion, S. G. | Nev. | 1,000,000 | 100,000 | 100 | 2,790,000 | Dec. | 1889 .25 |
| 23 | Butte & Boston, C. S. | Mont. | 5,000,000 | 200,000 | 25 | | | .25 |
| 24 | Calaveras, G. | Cal. | 500,000 | 500,000 | 1 | * | | |
| 25 | Carisa, G. | Wy. | 500,000 | 100,000 | 5 | * | | |
| 26 | Carupano, G. S. L. C. | Ven. | 200,000 | 100,000 | 2 | * | | |
| 27 | Cashier, G. S. | Colo. | 500,000 | 250,000 | 2 | * | | |
| 28 | Cherokee, G. | Cal. | 1,500,000 | 150,000 | 10 | | | |
| 29 | Cholla, S. | Colo. | 11,250,000 | 112,500 | 100 | 1,540,000 | Nov. | 1889 .50 |
| 30 | Cleveland, T. | Dak. | 1,000,000 | 500,000 | 2 | * | | |
| 31 | Colchis, G. | N. M. | 500,000 | 50,000 | 10 | | | |
| 32 | Colorado Silver | Colo. | 1,625,000 | 325,000 | 5 | | | |
| 33 | Comstock Tun. | Nev. | 10,000,000 | 100,000 | 100 | 35,000 | Mar. | 1887 .15 |
| 34 | Con. Imperial, G. & | Nev. | 5,000,000 | 50,000 | 100 | 1,875,000 | July. | 1890 .05 |
| 35 | Con. New York, S. G. | Nev. | 5,000,000 | 100,000 | 50 | 70,000 | Nov. | 1890 .15 |
| 36 | Con. Pacific, G. | Cal. | 6,000,000 | 60,000 | 100 | 198,000 | June | 1890 .10 |
| 37 | Con. Silver, S. | Mo. | 2,500,000 | 250,000 | 10 | | | |
| 38 | Crescent, S. L. | Colo. | 3,000,000 | 300,000 | 10 | * | | |
| 39 | Crocker, S. | Ariz. | 10,000,000 | 100,000 | 100 | 150,000 | June | 1890 .15 |
| 40 | Crowell, G. | N. C. | 500,000 | 500,000 | 1 | | | |
| 41 | Dahlonega, G. | Ga. | 250,000 | 250,000 | 1 | * | | |
| 42 | Dandy, G. | Colo. | 5,000,000 | 500,000 | 10 | | | |
| 43 | Decatur, S. | Colo. | 1,500,000 | 300,000 | 5 | * | | |
| 44 | Denver City, S. | Colo. | 5,000,000 | 500,000 | 10 | * | | |
| 45 | Denver Gold, G. | Colo. | 300,000 | 60,000 | 5 | | | |
| 46 | Dickens-Custer, S. | Idaho | 2,100,000 | 420,000 | 5 | | | |
| 47 | Durango, G. | Colo. | 500,000 | 500,000 | 1 | * | | |
| 48 | Eastern Dev. Co., Lt. | N. S. | 1,500,000 | 150,000 | 10 | 990,000 | Mar. | 1886 1.00 |
| 49 | El Cristo, G. S. | U.S.C. | 1,000,000 | 500,000 | 2 | | | |
| 50 | El Dorado, G. | Cal. | 1,000,000 | 250,000 | 4 | * | | |
| 51 | El Talento, G. | U.S.C. | 1,000,000 | 500,000 | 2 | | | |
| 52 | Emmons, S. L. | Colo. | 2,000,000 | 2,000,000 | 1 | | | |
| 53 | Empire, S. | Utah. | 10,000,000 | 100,000 | 100 | | | |
| 54 | Eureka Tunnel, S. L. | Nev. | 10,000,000 | 100,000 | 100 | * | | |
| 55 | Exchequer, S. G. | Nev. | 10,000,000 | 100,000 | 100 | 865,000 | July. | 1890 .25 |
| 56 | Found Treasure, G. S. | Nev. | 10,000,000 | 100,000 | 100 | 81,500 | May. | 1890 .25 |
| 57 | Gogebic I. Syn., I. | Wis. | 5,600,000 | 200,000 | 25 | | | |
| 58 | Gold Cup, S. | Colo. | 500,000 | 500,000 | 1 | * | | |
| 59 | Golden Era, S. | Mont. | 2,000,000 | 200,000 | 10 | * | | |
| 60 | Gold Rock, G. | Cal. | 1,000,000 | 500,000 | 2 | * | | |
| 61 | Goodshaw, G. | Cal. | 10,000,000 | 100,000 | 100 | * | | |
| 62 | Grand Belt, C. | Tex. | 12,000,000 | 120,000 | 100 | | | |
| 63 | Grand Duke. | Colo. | 800,000 | 80,000 | 10 | * | | |
| 64 | Great Remance, G. | U.S.C. | 1,000,000 | 500,000 | 2 | * | | |
| 65 | Gregory Con., G. | Mont. | 3,000,000 | 300,000 | 10 | | | |
| 66 | Harlem M. & R. Co., G. | Nev. | 1,000,000 | 200,000 | 5 | | | |
| 67 | Hartery Con., G. | Cal. | 1,000,000 | 100,000 | 10 | 22,000 | Oct. | 1890 .05 |
| 68 | Head Cent. & Tr., S. G. | Ariz. | 10,000,000 | 100,000 | 100 | | | |
| 69 | Hector, G. | Cal. | 1,500,000 | 300,000 | 5 | 45,000 | Jan. | 1888 .15 |
| 70 | Highland, C. | Mich. | 500,000 | 25,000 | 20 | | | |
| 71 | Hollywood. | Cal. | 200,000 | 100,000 | 2 | | | |
| 72 | Hortense, S. | Colo. | 2,000,000 | 200,000 | 10 | | | |
| 73 | Huron, C. | Mich. | 1,000,000 | 40,000 | 25 | 280,000 | May. | 1887 3.00 |
| 74 | Iron, Gold & Silver, S. | N. M. | 2,000,000 | 200,000 | 10 | * | | |
| 75 | Ironton, I. | Wis. | 1,000,000 | 40,000 | 25 | | | |
| 76 | Iroquois, C. | Mich. | 1,250,000 | 50,000 | 25 | | | |
| 77 | J. D. Reymert, S. | Ariz. | 10,000,000 | 100,000 | 100 | | | |
| 78 | Julia Con., G. S. | Nev. | 10,000,000 | 110,000 | 100 | 1,463,000 | Jan. | 1889 .10 |
| 79 | Lacrosse, G. | Colo. | 1,000,000 | 100,000 | 10 | * | | |
| 80 | Lee Basin, S. | Colo. | 5,000,000 | 500,000 | 10 | * | | |
| 81 | Madeleine, G. S. L. | Colo. | 750,000 | 750,000 | 1 | * | | |
| 82 | Mammoth Gold, G. | Ariz. | 245,0 0 | 49,000 | 5 | * | | |
| 83 | Mayflower Gravel, G. | Cal. | 1,000,000 | 100,000 | 10 | 585,000 | Mar. | 1890 .5. |
| 84 | Medora, G. | Dak. | 250,000 | 250,000 | 1 | * | | |
| 85 | Merrimac Con., G. S. | Colo. | 5,000,000 | 500,000 | 10 | * | | |
| 86 | Mexican, G. S. | Nev. | 10,000,000 | 100,000 | 10 | 2,791,96 | Oct. | 189. .25 |
| 87 | Middle Bar, G. | Cal. | 400,000 | 200,000 | 2 | * | | |
| 88 | Mike & Starr, S. C. | Colo. | 1,000,000 | 200,000 | 5 | * | | |
| 89 | Milwaukee, S. | Mont. | 500,000 | 500,000 | 1 | 12,500 | May. | 1891 .01 |
| 90 | Monitor, G. | Colo. | 100,000 | 1,000,000 | 1 | * | | |
| 91 | Mutual Mg. & Sm. | Wash. | 100,000 | 100,000 | 1 | * | | |
| 92 | Native, C. | Mich. | 1,000,000 | 40,000 | 25 | | | |
| 93 | Neath, G. | Colo. | 1,000,000 | 100,000 | 10 | | | |
| 94 | Nevada Queen, S. | Nev. | 10,000,000 | 100,000 | 100 | 200,000 | Oct. | 1889 .25 |
| 95 | New Germany, G. | N. S. | 100,000 | 100,000 | 1 | * | | |
| 96 | New Pittsburgh, S. L. | Colo. | 2,000,000 | 200,000 | 10 | * | | |
| 97 | N. Commonwealth, S. | Nev. | 10,000,000 | 100,000 | 100 | 85,000 | April | 1890 .25 |
| 98 | North Standard, G. | Cal. | 10,000,000 | 100,000 | 100 | 20,000 | Nov. | |
| 99 | Noonday | Cal. | 600,000 | 60,000 | 10 | 208,000 | Dec. | 1881 .10 |
| 100 | Oneida Chief, G. | Cal. | 500,000 | 125,000 | 100 | * | | |
| 101 | Oriental & Miller, S. | Nev. | 10,000,000 | 400,000 | 25 | | | |
| 102 | Osceola, G. | Nev. | 500,000 | 500,000 | 1 | * | | |
| 103 | Overman, G. S. | Nev. | 11,520,000 | 115,200 | 100 | 3,832,800 | Dec. | 1889 .25 |
| 104 | Park, S. | Utah. | 2,000,000 | 200,000 | 10 | | | |
| 105 | Peer, S. | Ariz. | 10,000,000 | 100,000 | 100 | 165,000 | Oct. | 1890 .10 |
| 106 | Peerless, S. | Ariz. | 10,000,000 | 100,000 | 100 | 405,000 | Oct. | 1890 .10 |
| 107 | Phœnix. | Ariz. | 500,000 | 500,000 | 1 | * | | |
| 108 | Phœnix Lead, S. L. | Colo. | 500,000 | 100,000 | 1 | * | | |
| 109 | Pilgrim, G | Cal. | 600,000 | 300,000 | 2 | * | | |
| 110 | **Pioche M. & R., S. G. L. | Utah. | 20,000,000 | 2,000,000 | 10 | | | |
| 111 | Potosi, S. | Nev. | 11,200,000 | 112,000 | 100 | 1,573,000 | Mar. | 1890 .50 |
| 112 | Proustite, S. | Idaho | 250,000 | 250,000 | 1 | * | | |
| 113 | Puritan, S. G. | Colo. | 1,500,000 | 150,000 | 10 | * | | |
| 114 | Quincy, C. | Colo. | 3,000,000 | 300,000 | 10 | | | |
| 115 | Rappahannock, G. S. | V. | 250,000 | 250,000 | 1 | * | | |
| 116 | Red Elephant, S. | Colo | 500,000 | 500,000 | 1 | * | | |
| 117 | Red Mountain, Ltd., S. | Colo. | 300,000 | 60,000 | 5 | * | | |
| 118 | Ropes, G. S. | Mich. | 2,000,000 | 80,000 | 25 | 147,206 | July. | 1887 .50

## STOCK MARKET QUOTATIONS.

### Baltimore, Md. Sept. 3.

| COMPANY. | Bid. | Asked. |
|---|---|---|
| Atlantic Coal | $1.00@$1.05 | $1.30 |
| Balt. & N. C. | .03 | ... |
| Big Vein Coal | .... | 1.25 |
| Conrad Hill | .... | .10 |
| Cons. Coal | .24@.25 | .27 |
| Diamond Tunnel | .... | .... |
| George's Crk. C. | 1.07 | 1.12 |
| Lake Chrome | .15 | .30 |
| Maryland & Charlotte | .... | ... |
| North State | .... | .... |
| Silver Valley | .62@.66 | .75 |

### Birmingham, Ala. Sept. 2.

| COMPANY. | Bid. | Asked |
|---|---|---|
| Ala. Coal & I. Co. | .... | $100 |
| Ala. Conn. C. & C. Co. | .... | $23 |
| Ala. R. Mill Co | $100 | $105 |
| *Alice Furnace | $100 | .... |
| Anna Howe G. Mg. Co. | $⅝ | $⅝ |
| Bessemer Land | $29 | $30 |
| Bir. Mg. & Mfg. | .... | $35 |
| Cahaba Coal Mg. Co. | .... | $61 |
| Camille Gold Mg. Co. | $¾ | $1 |
| De Bardeleben C. & I. Co. | $8½ | $9½ |
| Decat. L. Imp. | $8¾ | $9½ |
| Decatur Min. L. | .... | $19 |
| Ensley Land | $7½ | $9 |
| *Eureka | .... | .... |
| Florence L. & Mg. Co. | $15½ | $18 |
| Gadsen Land | $3⅜ | $3⅞ |
| Hecla Coal Co. | .... | .... |
| Hen. S. & M. Co. | $2¾ | $4¼ |
| Jagger-Townl'y C. & C. Co. | $8½ | $10 |
| Mag-Ellen | $100 | .... |
| Mary Lee C. & R. Co. | .... | $25 |
| Sheffield C. & I. Co. | $52½ | $55 |
| Sloss I. & S | $18½ | $21 |
| †Sloss I. & S | $85 | $87 |
| ‡‡ Sloss I. & S. | $49 | $52½ |
| Ten. C. & I. Co. | $32½ | $35 |
| " pref. | $86 | $88 |
| Tuscaloosa C. I. & L. Co. | $23 | $25 |
| Vulcan C. & C. Co | $5 | $7½ |
| Woodstock I. Co. | $28 | $29 |

* Bonds. † First mortgage. ‡‡ Second mortgage. ** Without interest.

### Pittsburg, Pa. Sept 3.

| COMPANY. | B. | A. |
|---|---|---|
| Allegheny Gas Co. | $42.00 | $43.50 |
| Bridgewater Gas Co. | .... | .... |
| Chartiers Val. Gas. | 8.75 | 9.50 |
| Columbia Oil Co. | 1.50 | 2.25 |
| Consignee Mg. Co. | .23 | .45 |
| Consolidated Gas Co. | 45.00 | 46.50 |
| East End E. Light Co. | .... | .... |
| East End Gas Co | .... | .... |
| Forest Oil | .... | .... |
| Hazlewood Oil Co. | .... | .... |
| Hidalgo Mining | 3.50 | 3.65 |
| La Noria Mining | .30 | .42 |
| Luster Mg. Co. | 11.88 | 12.13 |
| Mansfield C. & C. Co. | .... | .... |
| Manuf'turers Gas Co. | 24.00 | 26.00 |
| Nat. Gas Co. of W. Va. | 58.00 | 60.00 |
| N. Y. & Clev. Gas Coal | 37.00 | 40.00 |
| Ohio Valley Gas | 20.00 | .... |
| Pennsylvania Gas | 9.50 | 11.00 |
| People' Natural Gas | 12.00 | .... |
| People's N. G. & P. Co. | 7.25 | 8.25 |
| Philadelphia Co | 11.00 | 11.25 |
| Pine Run Gas Co. | .... | .... |
| Pittsburg Gas | 72.00 | .... |
| Silverton Mg. Co. | .... | 1.75 |
| South Side Gas. | .... | .... |
| Sterling Silver Mg. Co. | 4.00 | 5.00 |
| Tuna Oil Co. | 53.50 | 54.75 |
| Union Gas | .... | .... |
| Washington Oil Co. | .... | 91.50 |
| W house A. B. Co. | 108.25 | 111.00 |
| W'house Brake Co | .... | 75.00 |
| W'nouse E. Light | 13.00 | 14.00 |
| W'moreland & Camb. | .... | .... |
| Wheeling Gas | 20.50 | 21.50 |

### St. Louis. Sept. 2.

CLOSING PRICES.

| COMPANY. | Bid. | Asked. |
|---|---|---|
| Adams, Colo. | $1.75 | $2.00 |
| American & Nettie | .30 | .35 |
| Aztec, N. Mex | .08½ | .10 |
| Bi-Metallic | 35.00 | 36.50 |
| Central Silver | .01 | .... |
| Cleveland, Colo. | .... | .... |
| Elizabeth | 2.22½ | 2.35 |
| Four Mile | .... | .25 |
| Gold King | .... | .... |
| Granite Mountain, Mont. | .... | .... |
| Hope | .... | 2.00 |
| Ingram | .... | .... |
| I. X. L. Colo. | .... | .... |
| La Union | .... | .... |
| Little Albert | .01 | .... |
| Major Budd, Mont. | .... | .... |
| Mexican Imp | .... | .09 |
| Mickey Breen. | .42½ | .47½ |
| Montrose Placer, Colo. | 51¼ | .53¾ |
| Mountain Key | .... | .45 |
| Nellie | 04 | .... |
| Old Colony | .... | .... |
| Pat Murphy, Colo. | .05 | .05½ |
| Puzzle | .... | .... |
| Richmond Hill | .... | .... |
| St. Louis & Aspen | .04½ | .10 |
| Samoa | .... | .... |
| Silver Age, Colo. | .87½ | .96¼ |
| Small Hopes, Colo | .70 | .75 |
| Tourtelotte | .25 | .... |
| West Granite, Mont. | .... | .... |
| Wire Patch | .... | .... |
| Yuma, Ariz. | .32½ | .35 |

### Trust Receipts.

Sales at the New York Stock Exchange week ending Sept. 4:

| | Sales. | Price H. | Price L. |
|---|---|---|---|
| American Cotton Oil | .... | .... | .... |
| National Lead | 13,733 | 17¾ | 17 |

* Trust receipts.

### Trust Stocks. Sept. 4.

The following closing quotations are reported to-day by C. I. Hudson & Co., members of New York Stock Exchange:

CERTIFICATES.

| | |
|---|---|
| Am. Cotton Oil, Com | $25½@$26 |
| " " " Pfd | 47 @ 48 |
| Am. Sugar Refineries, Com | 87½@ 87¾ |
| " " " Pfd | 90 @ 90½ |
| Distillers' & Cattle Feeders'. | 47 @ 47¼ |
| Linseed Oil | 28½@ 33 |
| National Cordage, Com. | 96 .@ 96½ |
| " " Pfd. | 101 @101½ |
| National Lead | 17¼ @ 17⅜ |
| Standard Oil | 157 @158½ |
| W. U. Beef Co | 11½@ 13½ |

### Foreign Quotations.

#### London. Aug. 26.

| COMPANY. | Highest. | Lowest. |
|---|---|---|
| Almada, Mex. | 2s. | 1s. 9d. |
| Amador, Cal. | 5s. | 4s. |
| American Belle, Colo. | 8s. 6d. | 7s. 6d. |
| Appalachian, N. C. | 4½d. | 3½d. |
| Canadian Phos., Can. | £⅛ | £¼ |
| Colorado, Colo. | 2s. 6d. | 2s. |
| Comstock, Utah. | .... | .... |
| Cons. Esmeralda, Nev. | 1s. 9d. | 1s. 3d. |
| Cordova | .... | .. |
| De Lamar, Idaho | £1¼ | £1⅛ |
| Denver Gold, Colo. | .... | .... |
| Dickens Custer, Idaho. | 1s 9d. | 1s. 3d. |
| East Arevalo, Idaho. | 2s. | 1s |
| El Callao, Venezuela. | £¾ | £½ |
| Elkhorn, Mont. | £1⅜ | £1¼ |
| Elmore, Idaho | 1s. | 9d. |
| Emma, Utah | 1s. 9d | 1s. 3d. |
| Empire, Mont. | .... | .... |
| Flagstaff, Utah | 5s. 6d. | 5s. 6d. |
| Garfield, Nev | 6d. | 3d. |
| Golden Leaf, Mont | 2s. 6d. | 2s. 3d. |
| Jay Hawk, Mont. | 1s. | 6d. |
| Josephine, Cal. | 1s. | 6d. |
| Kohinoor, Colo. | .... | .... |
| La Luz, Mex. | 1s. 6d. | 1s. |
| La Valera, Mex. | 3s. 6d. | 2s. 6d. |
| Mammoth Gold, Ariz. | 2s. | 1s. 6d. |
| Montana, Mont. | 8s. | 7s. |
| New California, Colo. | 3s. 3d. | 2s. 9d |
| New Consolidated | 1s. | 6d. |
| New Eberhardt, Nev. | 1s. 3d. | 9d. |
| Newfoundland, N. F. | .... | .... |
| N. Gold Hill, N. C. | 1s. 3d. | 9d. |
| New Guston, Colo. | .... | .... |
| New Hoover Hill, N.C. | 1s. | 6d. |
| New La Platte, Colo. | 1s. 3d. | 9d. |
| New Russell, N. C. | 6d. | 3d. |
| New Viola, Idaho | 9d | 3d. |
| Old Lout, Colo | £3-16 | £1-16 |
| Palmarejo, Mex. | 11s. | 10s. |
| Parker Gold, N. C. | 1s. | .... |
| Pinos Altos, Mex. | 5s. 6d. | 4s. 6d. |
| Pittsburg Cons., Nev | 5s. | 4s. |
| Richmond Con., Nev. | 18s. | 16s. 6d. |
| Ruby, Nev. | 6d. | 3d. |
| Sam Christian, N. C. | 1s. 3d. | 9d. |
| Sierra Buttes, Cal. | £⅜ | £¼ |
| " Plumas Eur., Cal. | £⅜ | £½ |
| United Mexican, Mex. | 5s. | 4s. |
| U. S. Placer, Colo. | 9d. | 3d. |
| West Argentine, Colo. | 1s. | 9d. |
| Yankee Girl, Colo. | 18s. | 17s. |

#### Paris. Aug. 24.

| | Francs. |
|---|---|
| Belmez, Spain | 800.00 |
| Callao, Venez | 10.50 |
| Callao Bis., Venez. | 15.00 |
| East Oregon, Ore | 4.00 |
| Forest Hill Divide, Cal. | 80.00 |
| Golden River, Cal. | 130.00 |
| " " parts | 30.00 |
| Lexington, Mont | 95.00 |
| " parts | 2.50 |
| Rio Tinto, Spain | 583.12 |
| Tharsis, Spain | 163.75 |

## CURRENT PRICES.

Those quotations are for wholesale lots in New York.

### CHEMICALS AND MINERALS.

**Acid**—Acetic, No. 8, pure, 1,040, ℔ lb..04¼
Commercial, in bbls. and cbys..01¾@.02¼
Carbonic, liquefied. .40
Chromic, ch. pure. $1.00
for batteries. .50
Hydrobromic, dilute, U. S. P. .35
Hydrocyanic, U. S. P. .55
Hydrofluoric. .30
**Alcohol**—95%, ℔ gall. 2.10
Absolute 4.00
Ammoniated. 3.60
**Alum**—Lump, ℔ lb 1¾
Ground, ℔ lb. 1⅞
Powdered. 1@5
Lump ℔ ton, Liverpool £4 17 6
Sulphate of Alumina, ℔ lb. 1½@2⅝
**Alumina Chloride**—Pure, ℔ lb. 1.25
Amalgamating solution, ℔ lb. .60
**Ammonia**—Sul., in bbls., ℔ lb. 3-16
Carb, ℔ lb. .14
Muriate, white, in bbls., ℔ lb. .08½
**Ammoniates**—Fish guano, dried. $21
wet. 8 50@ 9 50
Acid phosphate, 14% per cent. 72½@ 80
**Aqua Ammonia**—(in cbys) 18° ℔ lb .03¾
20°, ℔ lb. .04¾
26°, ℔ lb .08¾
**Antimony**—Oxymur, ℔ lb. 4¾
**Argols**—Red, powdered, ℔ lb. .15
**Arsenic**—White, powdered ℔ lb. 3@3¼
Red ℔ lb. 5@5½
White at Plymouth, ℔ ton £12 2 6
**Asbestos**—Am., ℔ ton. $50@$300
Italian, ℔ ton, c. i. f. L'pool £18@£60
**Ashes**—Pot, 1st sorts, ℔ lb. 4¾@4⅞
Pearl 6¼@6½
**Asphaltum**—P. ton. 13.00
Prime Cuban, ℔ lb. 4½@5½c.
Hard Cuban, P ton. $28.00
Trinidad, refined, ℔ ton. $30.00
Egyptian 8@9
**Baryta**—Carbonate, pure, ℔ lb. .45
Carbonate, commercial, ℔ lb. .10
Chlorate, crystal. ℔ lb. .75
Chloride, commercial, ℔ lb. .10
pure, ℔ lb. .16
Iodide, ℔ oz. .40
Nitrate, powdered, ℔ lb. .15
Sulph., Am. prime white. 17@20
Sulph., foreign, floated, ℔ ton. 19½@21.50
Sulph., off color, ℔ ton. 11.50@14.00
Carb., lump, f. o. b. L'pool, ton. £6
No. 1, Casks, Runcorn, " " £4 10 0
No. 2, bags, Runcorn, " " 3 15 0
**Beeswax**—Refined, ℔ lb. .32
**Benzole**—℔ gall. 1.50
**Bichromate of Potash**—Scotch. 10@12
American. 10@12
**Bichromate of Soda**. 8½@11½
**Borax**—Refined, ℔ lb. 11
Concentrated. 8¼@8½
Refined " Liverpool ℔ ton. £29
**Bromine**—℔ lb. .55
**Cadmium Bromide**—℔ lb. 2.00
Iodide, ℔ lb. 5.50
**Chalk**—℔ ton. 1.75
Precipitated, ℔ lb. 4¾@5
**China Clay**—English, ℔ ton. 13½@21.00
Southern, ℔ ton. 13.50
**Chlorine Water**—℔ lb. .10
**Chrome Yellow**—℔ lb. 10@25
**Chromalum**—Pure, ℔ lb. .40
Commercial, ℔ lb. 1.12
**Cobalt**—Oxide, ℔ lb. 2.50@2.90
**Copper**—Sulph. English Wks. ton £20@£21
Vitriol (blue), ordinary .03
" " extra .3¾
Nitrate, ℔ lb. .10
**Copperas**—Common, ℔ 100 lbs. .70
Best, ℔ 100 lbs. 75@1.00
Liverpool, ℔ ton, in casks. £1 15s.
**Corundum**—Powdered, ℔ lb. 4½@.9
Flour, ℔ lb. .3
**Cream of Tartar**—Am. 99%. 24¼
Powdered, 99 p. c. 25
**Cryolite**—Powdered, ℔ lb. .12
**Emery**—Grain, ℔ lb. (℔ kg.). 4½@5
Flour, ℔ lb. 2½@10
**Epsom Salt**—℔ lb. .1¼
**Feldspar**—Ground, ℔ ton 20.00
**Fluorspar**—Powdered, No. 1, ℔ ton. 30 00
**Fuller's Earth**—Lump, ℔ bbl. 90@95
**Fusel Oil**—℔ gall. .60
Purified, ℔ gall. .75
Powdered, ℔ lb. 1⅞@2
**Gelatine**—Cox's, doz 2.00
Coignet's Gold Label, ℔ lb. 1.00
Silver Label, ℔ lb 88
Heinrich's Gold Label, ℔ lb. .75
for emulsion, ℔ lb. 1.00
Nelson s No. 1, ℔ lb. 1.10
No. 1, Shreds, ℔ lb. 1 25
No. 3, ℔ lb. .75
**Glauber's Salt**—in bbls., ℔ lb. .¾
**Glass**—Ground, ℔ lb. .10
**Glue**—Brown, ℔ lb. .20
White, ℔ lb. .30
**Glycerine**—Concent., ch. pure, ℔ lb. 25
**Gold**—Chloride, pure, crystals, ℔ oz. 12.00
pure, 15 gr., c. v., ℔ doz. 5 40
liquid, 15 gr, g. s. v., ℔ doz. 5.50
Chloride and sodium, ℔ oz 6.00
15 gr., c. v., ℔ doz. 2.88
Oxide, ℔ oz. 27 25
**Gypsum**—Calcined, ℔ bbl. 1.25@1.50
**Iodine**—Resublimed 2.75
**Iron**—Nitrate, 40°, ℔ lb 1½
47°, ℔ lb. 2½
**Kaolin**—*See China Clay.*
**Lead**—Red, ℔ lb. 6¾@7¼
White, American, in oil, ℔ lb. 6½@7¼
White, English, ℔ lb. 8¾@9
Acetate, or sugar of, white. 12@13
Nitrate 9@10
**Lime Acetate**—Amer Brown 1 10@1.20
" Gray 2.00@2.15
**Litharge**—Powdered, ℔ lb. 6½@7¼
English flake, ℔ lb. 9@9½
**Magnesite**—Greek, ℔ ton 20.00
**Manganese**—Crude, per unit. 23@28
Oxide, ground, per lb. 2½@6½
**Marble Dust**—℔ bbl 1.25
**Mercuric Chloride** —(*Corrosive Sublimate*) ℔ lb. .89
Powdered, ℔ lb .99
**Metallic Paint**—Brown per ton. $20@25
Red. $20@25
**Mineral Wool**—Ordinary slag. 1½
Ordinary rock. 2½
**Mica**—In sheets according to size, 1st quality, ℔ lb. 25@$6.00
**Naphtha**—Black. 05
**Nitre Cake**—℔ ton. 090
**Ochre**—Rochelle. 1.35@1.80
Washed Nat Oxford, Lump. 6½@6¾
Washed Nat Oxford, Powder. 7@7½
Golden. 3¾@4
Domestic. ¾@1½
**Oils, Mineral**
Cylinder, light filtered 15@20
Dark filtered 11@15
Extra cold test 18@20
Dark steam refined. 10@18
**Phosphorus**—℔ lb. 55@60
Precip., red .88
white .93
**Plumbago**—Ceylon, ℔ lb. 4@5
American, ℔ lb. 5@7
**Potash**—Kieserite. $9@$10
**Potassium**—Cyanide, ℔ lb., C. P. .72
Special. .50
Fused. .45
Bromide, ℔ lb .33
Chlorate, English, ℔ lb 11@14
Chlorate, powdered. 13@14
Carb, ℔ lb 544.70@5
Caustic, ℔ lb. 7½@8
Iodide. 2,65@2.70
Nitrate, refined, ℔ lb. 6@8
Bichromate, ℔ lb. 10½@11
Yellow Prussiate. 32½@35
Red Prussiate. 42@45
**Pumice Stone**—Select lumps, lb. 3¼
Original cks., ℔ lb. 1¾@2
Powdered, pure, ℔ lb. 2 @2½
**Pyrites**—Non-cupreous, p. units. 11@.12
**Quartz**—Ground, ℔ ton. 14.00@16.00
**Rotten Stone**—Powdered, ℔ lb. 3½
Lump, ℔ lb 5½@15
Original cks. 4½@5½
Rubbing stone. 7
**Sal Ammoniac**—in bbls., ℔ lb. 10½
**Salt**—Liverpool, ground, ℔ sack 75@80
Turk's Island, ℔ bush. 25@28
**Salt Cake**—℔ ton. 8 00
**Saltpeter**—Crude, ℔ lb. 3¾@4¼
Refined, ℔ lb. 6@8
**Soda**—Prussiate. 17½@18
Phosphate 7@18
Stannate. 8@15
**Strontium**—Nitrate, ℔ lb. 9½@10
**Sulphur**—Roll, ℔ lb. .021
Flour, ℔ lb. .02
**Sylvinit**, 23@27%, S.O.P., per unit. 40@42½
**Talc**—Ground French, ℔ lb. 1¼@1½
**Terra Alba**—French. 90@1.00
English. 75@80
American, No. 1. —@—
American, No. 2. 40@50
Domestic, ℔ ton. $18@$20
c. i. f. Liverpool, ℔ ton. £4 5
**Tin**—Crystals, in kegs or bbls. 16½
feathered or flossed. 25
Muriate, single. 7
Double or strong, 51° B. 9
Oxy. or nitro. 10
Bar. 25
**Vermillion**—Imp. English. .90 @ .95
Am. quicksilver, bulk. .67 @—
Am. quicksilver, bags .68 @ .71
Chinese. .95 @1.00
Trieste. 90 @ .95
American. 11½@ .12
Artificial. 8 @ .35
**Zinc**—Am., Dry, ℔ lb. 4½
Antwerp, Red Seal, ℔ lb. 7½
Paris, Red Seal, ℔ lb 8¼
Muriate solution 4
Sulphate crystals, in bbls., ℔ lb. 3
* Spot.

### THE RARER METALS.

**Aluminum**—Pure, per lb. $ .50
**Arsenic**—(Metallic), per lb. .40
**Barium**—(Metallic), per gram. 4.00
**Bismuth**—(Metallic), per lb. 2.75
**Cadmium**—(Metallic), per lb. 1.00
**Calcium**—(Metallic), per gram. 10.00
**Cerium**—(Metallic), per gram. 7.50
**Chromium**—(Metallic), per gram. 1 00
**Cobalt**—(Metallic), per lb. 6.00
**Didymium**—(Metallic), per gram. 9.00
**Erbium**—(Metallic), per gram. 7.50
**Gallium**—(Metallic), per gram. 140.00
**Glucinum**—(Metallic), per gram. 12.00
**Indium**—(Metallic), per gram. 9.00
**Iridium**—(Metallic), per oz. 7.00
**Lanthanum**—(Metallic), per gr. 10.00
**Lithium**—(Metallic), per gram. 10.00
**Magnesium**—Per lb. 4.50
**Manganese**—(Metallic), per lb. 1.10
Chem. pure, per oz. 10.00
**Molybdenum**—(Metallic), per gm .50
**Niobium**—(Metallic), per gram. 5.00
**Osmium**—(Metallic), per oz. 65.00
**Palladium**—(Metallic), per oz. 35.00
**Platinum**—(Metallic), per oz. 16.50@20.00
**Potassium**—(Metallic), per lb. 28.00
**Rhodium**—(Metallic), per gram. 5.00
**Ruthenium**—(Metallic), per gm. 5.50
**Rubidium**—(Metallic), per gram. 2.00
**Selenium**—(Metallic), per oz. 1.86
**Sodium**—(Metallic), per lb. 2.50
**Strontium**—(Metallic), per gm. .60
**Tantalum** (Metallic), per gram. 9.00
**Telurium**—(Metallic), per lb. 5.00
**Thallium**—(Metallic), per gram. .25
**Titanium**—(Metallic), per gram. 2.25
**Thorium**—(Metallic), per gram. 17.00
**Tungsten**—(Metallic), per lb. 1.00
**Uranium**—(Oxide), per lb. 5.00
Metallic, per gm. .20
**Vanadium**—(Metallic), per gm. 22.00
**Yttrium**—(Metallic), per gram. 9.00
**Zirconium**—(Metallic), per oz. 65.00

### BUILDING MATERIAL.

**Bricks**—Fronts, nominal, ℔ 1,000.
Croton. 14.00@.....
Wilmington. 20.00@21.00
Philadelphia. @22.00
Trenton. @22.00
Baltimore. @35.00
**Building Stone**—Amherst freestone, ℔ cu. ft. 95@1.00
Brownstone, ℔ cu. ft. 1.00@1.35
Granite, rough, ℔ cu. ft. 45@1.25
Granite, Scotch, ℔ cu. ft. 1.00@1.15
**Cement**—Rosendale, ℔ bbl. 85@1.10
Portland, American, ℔ bbl. 2.25@2.45
Portland, foreign, ℔ bbl. 2.40@2.50
Portland, " special brands 2.60@2.85
Roman, ℔ bbl. 2.75@2.90
Keene's coarse, ℔ bbl. 4.50@5.50
Keene's fine, ℔ bbl. 7.25@8.50
**Slate**—Purple and green roofing, ℔ 100 ft. 7.00@7.50
Red roofing, ℔ 100 sq. ft. 12.00
Black roofing, ℔ 100 sq. ft. 4.25@5.50
**Lime**—St. Johncom and finish., ℔ bbl. .90@.95
Glens Falls, com. and fin., ℔ bbl. 85@1.10

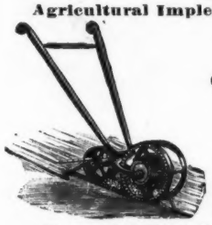
# NEW YORK PRICES CURRENT SEPTEMBER 5, 1891.

In the interest of the extension of the markets for American manufactures the ENGINEERING AND MINING JOURNAL has secured the services of gentlemen thoroughly acquainted with the export trade and with foreign markets, and it offers its services to foreign buyers who may desire information concerning any article whatever of American manufacture. No charge will be made for these services, either directly or indirectly through commissions on goods purchased. The proprietors of the ENGINEERING AND MINING JOURNAL are neither commission merchants nor exporters, but they have many sources of information, both at home and in foreign countries, and place these at the service of manufacturers and exporters here and of importers and consumers in other countries.

The names and addresses of the manufacturers of goods quoted in this list can be obtained by applying at this office.

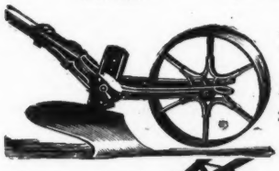
**Discounts are for Wholesale Export Only.**

## Agricultural Implements.



"Planet, Jr." No. 2 Seed Drill, $9. Dis. 30%.

Combined Drill Cultivator Rake, Plow, etc., $12. Dis. 30%.

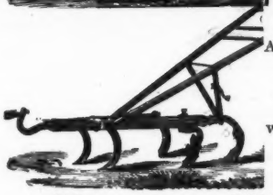


"Fire Fly" single-wheel Hoe, Cultivator and Plow, $5.

"Fire Fly" Hand Plow, $2.50.

30 % discount, f.o.b. New York.

All Steel Horse Hoe and Cultivator combined, with wheel, $6 75-100 net.



All Steel Plain Cultivator.

With wheel, $4.50; without wheel, 60c.

### HAY FORKS.

Standard Spading Forks.
Solid Steel Shanks, Gold Bronze Finish, Patent Overcaps.
Per doz.

8 D 4 light angular tine, iron D, plain ferrules, $17.00.
8 D S 4 light angular tine, iron D, strapped ferrules, $18.50.
11 D 4 light angular tine, iron D, plain ferrules, blue, half polished, $16 00.
13 D 4 light angular tine, iron D, strapped ferrules, blue, half polished, $17.50.
15 D 5 tine, angular tine, iron D, plain ferrules, $24.00.
17 D 5 tine, angular tine, iron D, strapped ferrules, $25.50.

Flat Tines.

D 4 tine spading fork, flat tine, iron D, plain ferrules, $17.00.
D S 4 tine spading fork, flat tine, iron D, strapped ferrules, $18.50.

74 4 tine spading fork, flat tine, 4 ft. handles, plain ferrules, $16.00.
74 S 4 tine spading fork flat tine, 4 ft. handles, strapped ferrules, $17.50.
Dis., 65 and 5% and 2½.

Manure Forks.

4 D, oval, 4 tine, 13 in. tine, iron D, plain ferrules, $13.50.
4 D S, oval, 4 tine, 13 in. tine, iron D, strapped ferrules, $15.00.
5 D, oval, 5 tine, 13 in. tine, iron D, plain ferrules, $20.50.
5 D S, oval, 5 tine, 13 in. tine, iron D, strapped ferrules, $22.00.
6 D oval, 6 tine, 13 in. tine, iron D, plain ferrules, $23.50.
6 D S, oval, 6 tine, 13 in. tine, iron D, strapped ferrules, $25.00.
Dis., 65 and 5% and 2½.

### PLOWS.

Reversible Oneonta Clipper.

16. Oneonta Clipper, Reversible, Iron beam Cutter..... $14
" Oneonta Clipper, Reversible, Iron Wheel and Cutter..... 15
18. Oneonta Clipper, Reversible, Iron Beam Cutter..... 15
" Oneonta Clipper, Reversible, Iron Beam, Wheel and Cutter.... 16
Hard Metal, Reversible, Iron Beam Cutter.....
17. Hard Metal, Reversible, Iron Beam, Wheel and Jointer..... 17
19. Hard Metal, Reversible, Wood Beam Cutter..... 16
" " " " " " Wheel and Jointer..... 17
20. Steel Mould Board, Reversible, Wood Beam Cutter 15
" " " " " " " Wheel and Cutter..... 16

Iron Beam Plows.

Two-horse Sod and Stony Land.... 8.50 plain.
Curtis's Sod Two horse..... 11.5¢ "
" " " " ..... 13.00 cutter.
" " " " ..... 14.25 wheel & cutter.

Subsoil Plows.

Two-horse 9.50 Draft Rod.
" " 11.00 Wheel and Draft Rod.

Hitchcock's Potato Digger and Shovel Plow.

Improved adjustable handle shovel plow..... 7.00
Hitchcock's Potato Digger..... 8.00
" " " and shovel plow..... 10.50
Dis. 30%.

### HOES.

Blade Solid Shank Hoes.

Field, 7 × 5 in., selected handles..$8.00
" 7½ × 4½ " " " .. 8.00
" 8 × 4¾ " " " .. 8.00
" 8½ × 4½ " " " .. 8.00
" 8 × 5 " " " .. 8.00

Field Socket Hoes..... $9.00

Dis., 65% and 5%.

### RAKES.

The S. R. N. Improved.

20 Teeth .....$28.00
22 " ..... 29.00
24 " ..... 30.00
26 " ..... 31.00
Dis., 33⅓%.

Chieftain Lock Lever
No. 1.....$16.00
No. 2. ..... 16.00
No. 5..... 15.00
Iron wheels, $1 extra. With Pole, Double Tree and Neck Yoke, $1 extra.
22 cubic feet packed, 400 lbs. gro., 225 lbs. net.

Golden Farmer Self-Dumping Rake, $19.00; 22 cu. ft., 430 lbs. gro., 250 lbs. net.
Chieftain Hay Tedders, $27.00; 700 lbs. gro., 450 lbs. net.
Potato Diggers, $5.00; 100 lbs. gro., 60 lbs. All net cash, f.o.b. ship New York or Boston.

### RAKES (GARDEN).

Malleable Iron Garden Rakes, Per Doz.

Plain.
8 teeth, 6-ft. handles, straight shank $5.00
10 " " " " " " 5.50
12 " " " " " " 6.00
14 " " " " " " 6.50
16 " " " " " " 7.00

For braced goods, add 50 cents per dozen to list.

Cast Steel Garden Rakes, Per Doz.

| | Plain. | Braced. |
|---|---|---|
| 8 teeth, 6-ft. handles | $8 00 | $9.50 |
| 10 " " " | 9.00 | 10.50 |
| 12 " " " | 10.00 | 11.50 |
| 14 " " " | 11.00 | 12.50 |
| 16 " " " | 12.00 | 13.50 |

Lawn Rakes and Gravel Rakes same price as Garden Rakes.
Discounts on Rakes from list.
The P. H. & M. Co., 60 and 10%.
W. & C. Mfg. Co., 70%.
S. F. & T. Co., 70 and 5%.
G. T. Co., 70 and 5%.
Phila. S. H., 60, 10 and 5%.

### SCYTHES (GRASS).

Waldron's pattern, oiled..... $8.50
Silver steel, painted..... 8.50
Western dutchman, bronzed and painted..... 9.00
Clipper, polished web..... 9.00
Fine cutlery steel, full polished..... 10.00
All steel, full polished..... 11.00

Grain Scythes.

Waldron's pattern, oiled..... 11.25
Silver steel, painted..... 11.25
Clover, oiled..... 11.25
Clipper, bronzed and painted..... 11.50

Lawn Scythes.

Clipper, bronzed and painted..... 9.0
Dis., 10and 10%.

### SOWER, BROADCAST SEED.

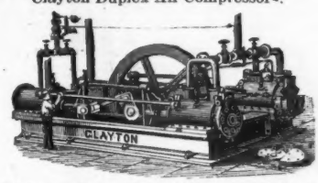
Per dozen..... $30 f.o.b

Gross wt., 110 pounds per dozen

Net wt., 75 pounds per dozen.

## Air Compressors.

Clayton Duplex Air Compressors.




Special design for export. Shipping weight, 8,000 lbs. No one piece weighing over 300 to 400 lbs. Size No. 3½. Steam cylinders, each 12 in. diameter; air cylinders, each 12 in. diameter, and stroke, 13 in.; capacity, six 3 in. rock drills. Price, $3,000 f.o.b. New York. Dis., 20%.

### Anvils.

Eagle anvils.

| | Weight about | | | Weight about | |
|---|---|---|---|---|---|
| No. 000..... | ½ lb. | $1.00 | No. 4..... | 40 lbs. | $4.25 |
| " 00..... | 4 " | 1.75 | " 5..... | 50 " | 5.00 |
| " 0..... | 10 " | 2.25 | " 6..... | 60 " | 5.50 |
| " 1..... | 15 " | 2.75 | " 7..... | 70 " | 6.00 |
| " 2..... | 20 " | 3.00 | " 8..... | 80 " | 7.00 |
| " 3..... | 30 " | 3.75 | " 9..... | 90 " | 8.00 |

Anvils weighing 100 to 800 lbs., 10 cts. per lb. Discount 15 and 10 %.

### Arms and Ammunition.

| | Wood Powder. Kegs, 25 lbs. | ¼ kegs. ½ keg. | 6¼ lbs. can |
|---|---|---|---|
| Trap for first quality arms only | $19.50 | 9.85 trap. 8.60 let'd grades. | 5.00 .85 |
| A, for large bore.....<br>C, for general use..<br>D, fine for small bore and rifles.....<br>E, very fine for small bore rifles and gallery shooting..... | 17.00 | | 4.35 .75 |

Dis.. 20-5 and 5%

| | Discount. Per cent. | |
|---|---|---|
| Bullet Breech Caps..... per lb. | 1.60 | 10 |
| Conical Bullet Caps..... " | 1.75 | 10 |
| | Discount. Per cent. | |
| Rim Fire Cartridges..... | 60 | 10 |
| Military Rim Fire Cartridges..... | 15 | 10 |
| Central Fire Pistol and Rifle Cartridges.. | 40 | 10 |
| Central Fire Metallic Cartridges for Target and Sporting Rifles..... | 30 | 10 |
| Military Cartridges, Central Fire..... | 30 | 10 |
| Lefaucheux Cartridges..... | | 60 |

| | | |
|---|---|---|
| Gatling Cartridges..... | | Specia |
| Primed Shells and Bullets..... | 25 | |
| Friction Cannon Primers..... | 20 | |
| Primers..... | | |
| Percussion Caps, F. G ..... per M. | | 33c. |
| U. M. C..... " . | | 42½c. |
| Musket..... " . | | 45c. |
| Brass Shot Shells, U. M. C., 1st qual..... | 60 | |
| Club brand..... | 65 | |

Paper Shot Shells.

14, 16 and 20 ga. First quality, 30, 10 and 10 per cent; 4, 8, 10 and 12 ga., First quality, 25, 10 and 10 per cent.
14, 16 and 20 ga. Club brand, 30, 10 and 10 per cent.
10 and 12 ga. Club brand, 33⅓, 10 and 10 per cent.
Gun Wads, 20 and 10 per cent.

### RIFLES.

Colts' Lightning Magazine.

| | Discount | 10 p | cent |
|---|---|---|---|
| 40/60 and 45/60 calibre octagon barrel... | 10 | lbs. | $15.38 |
| " " " " round | " | ... 9¾ " | 14.25 |
| " " " " carbine | " | ... 9 " | 14.25 |
| 32, 38, and 44 calibres, octagon | " | ... 7¼ " | 13.50 |
| " " " " round | " | ... 6¾ " | 12.38 |
| " " " " carbine | " | ... 6¼ " | 12.38 |
| " " " " baby carbine..... | | 5¼ " | 12.38 |
| 22 calibre, rim fire, octagon barrel..... | | | 15.38 |
| " " round..... | | | 14.25 |

Remington Light (Baby) carbines. 44 cal., blue, $8; nick. $8 50. Dis., 5%.

### MARLIN RIFLE. MODEL, 1889.

The best in the market, embodying all latest improvements.

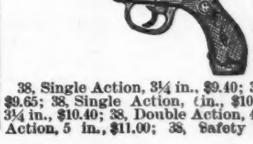
38 and 44 calibres, using the same cartridges as Winchester rifles of the respective sizes.

| | | | | |
|---|---|---|---|---|
| Octagon barrel, 24 inch, | 6¼ | lbs..... | | $19.50 |
| " " | 26 | " | 6¾ " | 21.50 |
| " " | 28 | " | 7 " | 23.50 |
| Round " | 24 | " | 6½ " | 18.50 |
| Carbine | 20 | " | 5½ " | 17.50 |

Discount, 25, 10 and 10%.

### REVOLVERS.

S & W.



32, Single Action 3, 3½ in., $8.00.
32, Double Action, 3, 3½ in., $9.35
32, Safety Hammerless, 3, 3½ in., $ 00.

38, Single Action, 3¼ in., $9.40; 38, Single Action 4 in., $9.65; 38, Single Action, 5in., $10.00; 38, Double Action, 3¼ in., $10.40; 38, Double Action, 4 in., $10.65; 38, Double Action, 5 in., $11.00; 38, Safety Hammerless, 3¼ in.,

$12.00; 38, Safety Hammerless, 4 in., $12.25; 38, Safety Hammerless, 5 in., $12.50; 44, Single Action, 4 in., $11.50; 44, Single Action, 5 in.. $11.75; 44, Single Action, 6, 6½ in $12.00; 44, Double Action, 4 in., $12.50; 44, Double Action, 5 in., $12.75; 44, Double Action, 6½ in., $13.00; 44, Double Action Favorite, 5 in., $12.75.

Colts.

Discount, 10 per cent from following prices.

Double Action Army, 44 and 45 calibre, 4¾, 5½, 7½ inch bbl., $13.00.
Double Action, 41 calibre, 2½ to 6 inch bbl., $11.20.
" " 38 " 2½ to 6 " " $10.00.
Single " Army, 45 calibre, 4¾, 5½, and 7½ inch bbl., $12.00.
Single Action Army, 44 calibre, "Frontier," 4¾, 5½, and 7½ inch bbl., $12.00.
New Line 32, $4.00.
" " 30, 2.00.
" " 22, half or full plate, 2.10.
Old Model, 22 calibre, by the hundred, half or full plate, $1.50.
Colt Deringer. 41 calibre, per pair half or full plate, 5.50.
National Deringers. 41 calibre, per pair, half or full plate, $4.00.
New Police, 38, 4½ in., nickeled, $6.66.

American Bull Dog

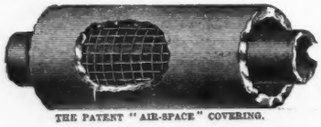
Double Action 32, 38 and 44 calibre, 2½ inch barrel, $1.60; Double Action 32, 38 and 44 calibre, 4½ inch barrel, $1.85; Double Action 32, 38 and 44 calibre, 6 inch barrel, $2.10 net.

F. & W. British Bull Dog revolvers, 32 and 38 calibre 2½ inch bbl., $1.85 net.
F. & W. Automatic revolver, 32 and 38 calibre, 3½ inch bbl. $4.00 net.
H. & R. Automatic revolver, 32 and 38 calibre, 3½ inch bbl., $3.75 net.

Net.

Defender revolvers, Single Action, 22, wood handle, 65.
" " " " 22, rubber " 70.
" " " " 32, wood " 85.
" " " " 32, rubber " 90.
Remington Army revolver, Single Action, 44 cal., frontier cartridge, 5¾ inch barrel, $6.50.
Remington Army revolver, Single Action, 44 cal., frontier cartridge, 7½ inch barrel, $6.00.
Remington Double Deringers, 41 cal., rim fire, $4.05.

**Asbestos Goods.**

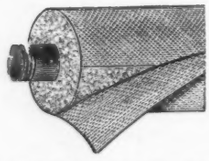


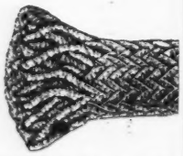
THE PATENT "AIR-SPACE" COVERING.

Patent air-space coverings. Per sq. ft., 25c. Discount, 20%.

Wick packing, per pound, 45c.
Discount, 10%.

Removable pipe coverings. } See list. Sq. ft. 20c. Disc., 25%.





Fire felt covering for steam pipes. Per sq. ft., 25c. See list.
Piston Packing.. Per pound, 45c.
Discount, 25%. Discount, 10%.

| | | | |
|---|---|---|---|
| Asbestos Fibre for filtering.... | per | lb. | 40c. disc 20% |
| " Cord 95c., and Sewing Twine, $1.35..... | | | |
| Asbestos cloth, 36 inches wide.. | per | yard | 2.25 " 10% |
| " cement for boilers..... | per | bbl. | 3.25 " 10% |
| " sheathing..... | per | lb. | .12½ " 10% |
| " building felt..... | " | " | .10½ " 10% |
| " hair felt for hot and cold water pipes..... | per | sq. ft | See spec. list. |
| Asbestos mill board..... | per | lb. | .12½ " 10% |
| " soldering blocks..... | per | doz. | See list. |

**Assay Furnace.**
Hydro-Carbon Blow-Pipe Assay Furnace.

No. 2, Muffle Furnace taking C Battersea Muffle 8x4¾x3 in..... $10.00
No. 3, taking F Muffle, 10x6x4 in..... 15.00
No. 1, Crucible Furnace, taking Battersea, U or Colorado B Crucible, 4 in. dia. 5½ deep.. 4.00
No. 2 taking Battersea, round, 5 in. dia.. 6¼ deep..... 5.00
Blow-Pipe No. 2, with half gallon tank, made entirely of seamless brass..... 23.00
Blow-Pipe No. 3, with one gallon tank, otherwise same as No. 2..... 26.00
Blow-Pipe No. 2, Muffle Furnace No. 2, and Crucible Furnace No. 1..... 37.00
Blow-Pipe No. 3, Muffle Furnace No. 3, and Crucible Furnace No. 2..... 46.00
25% f. o. b. New York on wholesale orders.

**Axes, etc.**
**Axes,** Handled.

| Brands, | Collins. doz. | Sharp. doz. | Pecks. doz. |
|---|---|---|---|
| Dis., % | 10 | 35 | Net |
| 3½@4½ lbs.... | $10.75 | $15.00 | 9.50 |
| 4½@5¼ lbs..... | 11.00 | 15.50 | 9.50 |
| 4¼@6 lbs..... | 11.50 | 16.00 | 10.00 |
| 5@7 lbs..... | 12.50 | 17.50 | 11.00 |

| Brands, | Hurd. doz. Net | American Ideal. doz. Net | Blair. doz. Net. | Freeman. doz. Net |
|---|---|---|---|---|
| 3½@4½ lbs. | $8.50 | $11.00 | $8.00 | $6.50 |
| 4¼@5¼ lbs. | 8.50 | 11.00 | 8.00 | 7.00 |
| 4½@6 lbs... | 8.75 | 11.25 | 8.25 | 7.00 |
| 5@7 lbs..... | 9.00 | 11.50 | 8.50 | 7.50 |

| Brands, | Collins. doz. | Sharp. doz. | Pecks. doz. |
|---|---|---|---|
| Dis., % | 10 | 50 | 50 & 5 |
| Three-quarter axe.... | $8.00 | $13.50 | $13.50 | $13.50 |
| Boys' axe, No. 2..... | 8.00 | 13.50 | 13.50 | 13.50 |
| Half axe..... | 7.00 | 12.50 | 12.50 | 13.00 |
| Quarter axe..... .... | 6.50 | 10.00 | 10,00 | 11.00 |

| Brands, | Collins. doz. | Hurd. doz. | Freeman. doz. |
|---|---|---|---|
| Dis., % | 60 5 | 50 5 | 25 |
| Three-quarter axe..... | $13.50 | $13.50 | $7.50 |
| Boys' axe, No. 2... ..... | 13.50 | 13.50 | 7.50 |
| Half axe ..... | 12.50 | 12.50 | 6.50 |
| Quarter axe ..... | 12.00 | 12.00 | 6.00 |

Hatchets, with handles.

AXE PATTERN. HUNTER'S.
Both patterns, same price.

| | Collins. | Sharp. | Pecks. | Simmons. |
|---|---|---|---|---|
| Dis., % | 10 | 50 | 50 & 5 | 50 |
| Dozen. ..... | $6.00 | $10.00 | $9.00 | $9.00 |

SHINGLING. CLAW.

Shingling.

| Brands, | Collins. | Sharp. | Pecks. | Mann |
|---|---|---|---|---|
| Dis., % | 10 | 50.5 | 50 & 5. | 50.5 |
| No. 1 Doz..... | $4.75 | $8.00 | $8.00 | $8.00 |
| No. 2 " ..... | 5.25 | 8.50 | 8.50 | 8.50 |
| No. 3 " ..... | 5,75 | 9.00 | 9.00 | 9.00 |

Claw.

| Brands. | Collins. | Sharp. | Blair. | Mann |
|---|---|---|---|---|
| Dis., % | 10 | 50, 5 | 60, 5 | 50, 5 |
| No 1. Doz..... | $5.25 | $9.00 | $9.00 | $9.00 |
| No. 2. " ..... | 5.75 | 9.50 | 9.50 | 9.50 |
| No. 3. " ..... | 6.25 | 10.00 | 10.00 | 10.00 |

| Brands. | Collins. | Hunt. | Sharp. | Pecks. |
|---|---|---|---|---|
| Dis., %.... | 10 | 45 | 50 | 50 & 5 |
| Dozen.... | $20.00 | $30.00 | $29.00 | $32.00 |

YANKEE, OR OHIO. PENNSYLVANIA. NEW ORLEANS.

| Brands. | Collins. | Sharp. | Pecks. | Blair. | Mann. |
|---|---|---|---|---|---|
| Dis., %..... | 10 | 50 | 50 & 5 | 60, 10 | 50 |
| Dozen..... | $19.00 | $32.00 | $32.00 | $32.00 | $32.00 |

Handled, extra, $4.

Adzes.

RAILROAD. SQUARE HEAD. SHIP CARPENTER'S

| Brands. | Collins. | Hunt. | Sharp. | Pecks. | Hurd |
|---|---|---|---|---|---|
| Dis., % ..... | 10 | 45 | 50 | 50 | 50, 50 |
| Railr'd, heavy, doz.. | $14.00 | $26.00 | $26.00 | $26.00 | $26.00 |
| Flat head " .. | 15.00 | 24.00 | 24.00 | 24.00 | 24.00 |

| Brands. | Collins. | Hunt. | Sharp. | Pecks. | Hurd. |
|---|---|---|---|---|---|
| Dis., %..... | 10 | 45 | 50 | 50 | 50, 100 |
| Square head, doz.... | $12.50 | $24.00 | $24.00 | $24.00 | $24.00 |

| Brands. | Collins. | Hunt. | Sharp. |
|---|---|---|---|
| Dis., %..... | 10 | 45 | 50 |
| Ship Carpenter's or Spur Head, doz..... | $13.00 | $25.00 | $25.00 | $25.00 |

| Brands. | Collins. | Hunt. | Sharp. |
|---|---|---|---|
| Dis., % ..... | 10 | 45 | 50 |
| Cooper's, handled and bolted, doz.. | $16.00 | $27.00 | $25.00 |

**Axle Grease.**

| | |
|---|---|
| Frazer's (2-lb. tins), per gross..... | $18.00 |
| 2-lb. wooden boxes, " ..... | 12.00 |

Discount, 25 and 5 %.

| | | |
|---|---|---|
| Dixon's Everlasting, boxes 1 lb., per doz..... | | $1.20 |
| " " " 2 lbs., " ..... | | 2.00 |

See Oils, page 10.

**Bellows.**

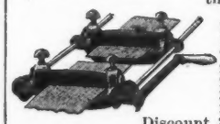
Miner's Bellows 24 in., $8.50; 26 in., $9.75; 28 in., $11.00; 30 in. $11.25; 32 in., $13.50.
60 and 5% dis.
Standard, each: 18 to 24 in., $10; 28 in., $12; 32 in., $14; 34 in. $16; 36 in., $18; 38 in., $20; 40 in., $25; 42 in., $27; 44 in., $32
60 and 5% dis.
Hand Bellows, per doz.: 6 in., plain, $10; fancy, $20; 7 in., plain, $12; fancy, $24; 8 in., plain, $14; fancy, $28; 9 in. plain, $16; fancy, $32; 10 in. plain, $18; fancy, $36.
50% dis.

**Belting.** LEATHER BELTS.
Standard Manufacturers List.
Single belts per foot.

| Width. | | Width. | | Width. | |
|---|---|---|---|---|---|
| 1 inch..... | .10 | 6 inch..... | .76 | 20 inch..... | 2.84 |
| 1¼ " ..... | .13 | 7 " ..... | .90 | 21 " ..... | 3.02 |
| 1½ " ..... | .17 | 8 " ..... | 1.02 | 22 " ..... | 3.20 |
| 1¾ " ..... | 20 | 9 " ..... | 1.15 | 23 " ..... | 3.37 |
| 2 " ..... | .23 | 10 " ..... | 1.29 | 24 " ..... | 3.54 |
| 2¼ " ..... | .26 | 11 " ..... | 1.42 | 26 " ..... | 3.92 |
| 2½ " ..... | .30 | 12 " ..... | 1.55 | 28 " ..... | 4.30 |
| 2¾ " ..... | .33 | 13 " ..... | 1.68 | 30 " ..... | 4.64 |
| 3 " ..... | .36 | 14 " ..... | 1.82 | 32 " ..... | 5.00 |
| 3½ " ..... | .43 | 15 " ..... | 1.98 | 34 " ..... | 5.35 |
| 4 " ..... | .50 | 16 " ..... | 2.14 | 36 " ..... | 5.70 |
| 4½ " ..... | .56 | 17 " ..... | 2.31 | 40 " ..... | 6.40 |
| 5 " ..... | .63 | 18 " ..... | 2.49 | 44 " ..... | 7.10 |
| 5½ " ..... | .70 | 19 " ..... | 2.66 | 48 " ..... | 7.80 |

Double belts twice the price of single.
Dis. single and double belts, cemented, 50 and 5%.
Dis. single and double belts, riveted and cemented, 50 and 5%.
Dis. single belts, cemented and lacesewn, waterproofed, 50%.
Dis. double belts, cemented and lacesewn, waterproofed, 45%.

**Belt Clamp.**
For Drawing Belts Together for the purpose of Lacing them.



| | |
|---|---|
| 8 inch..... | $14.00 |
| 12 " ..... | 18.00 |
| 16 " ..... | 22.00 |
| 20 " ..... | 26 00 |
| 24 " ..... | 30.00 |
| 28 " ..... | 34.00 |
| 32 " ..... | 38.00 |
| 36 " ..... | 44.00 |

Discount, 30% and 10%.

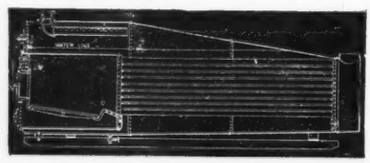
**Blowers and Disc Fans.**

| | | | | | |
|---|---|---|---|---|---|
| 12 inches.. | | $30 | 42 inches..... | | $100 |
| 18 | " ..... | 40 | 48 | " ..... | 125 |
| 24 | " ..... | 50 | 54 | " ..... | 160 |
| 30 | " ..... | 65 | 60 | " ..... | 200 |
| 36 | " ..... | 85 | | | |

Discount 35% and 2½ for cash.

**Boiler (Scotch Flue).**

Self-contained. Portable.

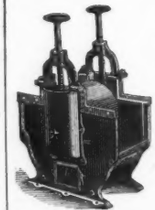


Durable. Economical.

| Horse power..... | 8 | 10 | 15 | 20 | 25 | 30 | 35 |
|---|---|---|---|---|---|---|---|
| Diameter..... | 28" | 32" | 32" | 36" | 40" | 40" | 44" |
| Length, feet..... | 9½ | 10 | 12½ | 13¼ | 14¾ | 16¼ | 16¾ |
| Weight, pounds. .... | 3500 | 4000 | 4500 | 5 00 | 6500 | 6900 | 7500 |
| Price, $..... ..... | .... | .... | 387 | 487 | 580 | 634 | 767 |
| Horse power..... | 40 | 45 | 50 | 55 | 60 | 70 | 80 |
| Diameter, inches.... | 44 | 48 | 48 | 52 | 52 | 56 | 56 |
| Length, feet..... | 17½ | 16½ | 18 | 17½ | 18½ | 18 | 19 |
| Weight, pounds .... | 8000 | 8500 | 8800 | 9500 | 10,000 | 11,000 | 12,00 |
| Price, $..... .. ..... | 827 | 920 | 1027 | 1147 | 1227 | 1387 | 150 |

Discount 15%.

**Elevator Boots with Sprocket Wheels or Pulleys.**



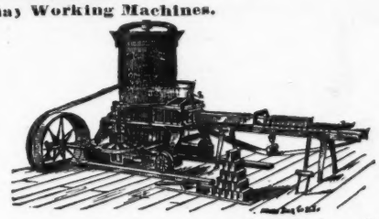
| Diam. of pulley. | Length of bucket. | Price of cast iron boot. | Price of hard-wood boot. |
|---|---|---|---|
| 12 | 5 | $28.00 | $28 00 |
| 12 | 6 | 30.00 | 30.00 |
| 14 | 7 | 35.00 | 35.00 |
| 14 | 8 | 40.00 | 40.00 |
| 16 | 9 | 45.00 | 45.00 |
| 16 | 10 | 50.00 | 50.00 |
| 18 | 12 | 60.60 | 60.00 |
| 18 | 14 | 66.00 | 66.00 |
| 18 | 16 | 70.00 | 70.00 |
| 20 | 18 | 85.00 | 85.00 |
| 20 | 20 | 90.00 | 90.00 |

Prices will be quoted on sizes not listed above.
Discount, 35%.

## Brick Machinery.

| | |
|---|---|
| Heavy Steam Power Machine | $525.00 |
| Horse-Power Machines | 300.00 |
| Additional Horizontal Pugmill | 22 |
| Brick Moulds | $2.50 to $3.00 |
| Brick Trucks | 5.00 to 13.50 |
| Brick Barrows | 7.25 |
| Brick Barrows with Springs | 8.70 |
| Sand Barrows, steel tray | 6.40 |

### Clay Working Machines.



| | Capacity. | Price. |
|---|---|---|
| No. 20 A brick machine | 60,000 to 80M | $3,500 |
| No. 20 B " " | 50,000 | 2,500 |
| No. 15 D " " | 40,000 | 1,800 |
| No. 10 D " " | 40,000 | 1,500 |
| No. 15 S " " | 30,000 | 1,400 |
| No. 10 S " " | 25,000 | 1,200 |
| Upright stock brick machine | 25,000 to 30M | 1,200 |
| No. 7 S brick machine | 20,000 | 650 |
| No. 6 S " " | 15,000 | 575 |
| No. 2 E " " | H. P. 6,000 to 8,000 | 400 |

## Brushes.

PAINT BRUSHES.

Intermediate prices not quoted.

Prices per dozen.

| | No. 6. | 4. | 2. | 0. | 3-0. | 5-0. | 7-0. | Dis |
|---|---|---|---|---|---|---|---|---|
| X | $1.15 | $1.80 | $2.50 | $3.15 | $4.00 | $5.25 | $6.75 | 25% |
| Atlantic | 1.25 | 2.15 | 3.80 | 5.25 | 7.00 | 10.00 | 13.00 | 25% |
| Standard | 1.60 | 2.60 | 4.00 | 6.00 | 8.00 | 11.00 | 16.00 | 25% |

VARNISH OVAL.

| | No. 6. | 4. | 2. | 0. | 3-0. | 5-0. | 7-0. | Dis. |
|---|---|---|---|---|---|---|---|---|
| Globe | $1.15 | $1.80 | $2.50 | $3.25 | $4.60 | $6.00 | $8.00 | 25% |
| Crown | 1.20 | 2.00 | 2.75 | 4.00 | 5.25 | 7.00 | 10.00 | 25% |

VARNISH FLAT.

| | No. 1. | 1½. | 2. | 2½. | 3. | Dis. |
|---|---|---|---|---|---|---|
| X | $0.48 | $0.72 | $0.96 | $1.20 | $1.40 | 25% |

SASH BRUSH.

| | No. 1. | 3. | 5. | 7. | 9. | Dis. |
|---|---|---|---|---|---|---|
| X | $0.25 | $0.40 | $0.60 | $0.85 | $1.20 | 25% |
| XX | 0.40 | 0.75 | 1.10 | 1.40 | 2.00 | 25% |

WHITE-WASH.

| | No. 6. | 7. | 8. | Dis. |
|---|---|---|---|---|
| Brown | $1.25 | $1.60 | $2.00 | 25% |
| Pure | 2.40 | 4.00 | 6.00 | 25% |

SHOE.

Per gross.

| | 8. | 9. | 25. | 15. | 26. | Dis. |
|---|---|---|---|---|---|---|
| | 10 | $11.50 | $12.50 | $15 | $18 | 25% |

Per gross dis., 25%.

| 27. | 32. | 29. | 35. |
|---|---|---|---|
| $20.00 | $24.00 | $28.00 | $30.00 |

HORSE.

Patent.

Per gross, dis., 25%.

| $18.00 | $20.00 | $24.00 | $30.00 |
|---|---|---|---|

Per gross, dis., 25%.

| | | | |
|---|---|---|---|
| Wood back | $12 | $15 | $18 | $24 |
| Leather back | $24 | $31 | $50 | $42 | $54 |

SCRUB.

Patent.

Per gross, dis., 25%.

| | | |
|---|---|---|
| $12.00 | $16.00 | $18.00 |

Per gross, dis., 25%.

| | | | | |
|---|---|---|---|---|
| $ .50 | $8.50 | $12 | $14 | $18 |

SHAVING.

Per doz., dis., 25%.

| | | | | |
|---|---|---|---|---|
| $0.36 | $0.60 | $1.00 | $1.50 | $2.50 |

COUNTER.

Per doz., dis., 25%.

| | | |
|---|---|---|
| $3.00 | $4.00 | $5.00 |

## Elevator Buckets.

Malleable Iron Buckets. Suitable for Extra Heavy Work. For Coal Ore, Broken Stone, etc.

| Length. | Width. | Capacity in pints. | Price. |
|---|---|---|---|
| 4½ | 3 | ¾ | $0.40 |
| 6 | 4 | 1¼ | 50 |
| 7 | 4½ | 2¼ | 65 |
| 8 | 5 | 3¼ | 80 |
| 10 | 6 | 5½ | 1.10 |
| 12 | 7 | 8 | 1.50 |
| 14 | 6 | 9½ | 1.60 |
| 16 | 7 | 11½ | 2.00 |
| 16 | 8 | 13¾ | 2.25 |

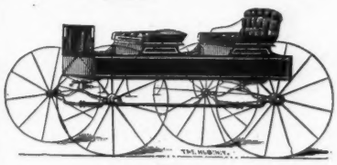
Discount, 45%.

## Carriages, Etc.

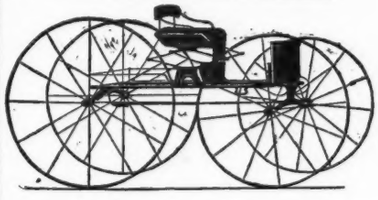
Windsor Surrey. Open, $120. Canopy top, $145. Leather extension top, $185. Pole or shafts.

Cut under Surrey. Canopy top, $185. Leather extension top, $220.

Brewster Spring. Open, $55. Rubber top, $76. Leather top, $100.



Runabout, $65.



Buckboard. $50 ; shafts

| | |
|---|---|
| No. 0. Cart, top and fenders | $150 |
| No. 1. Cart, top and fenders | 90 |
| No. 2. Cart, one man cart, open | 65 |
| No. 2. Cart, one man, top | 86 |
| No. 2. Cart, one man, top and fenders | 90 |
| No. 3-H. Cart, two man, open | 54 |
| No. 4. Cart, two man, top | 86 |
| No. 5. Cart, two man, top and fenders | 90 |
| No. 6. Cart, two men, top and fenders | 90 |
| No. 7. Two-man combination cart | 110 |

Wide track 5 feet.
Narrow track 4 feet 8 inches.
Discount 33⅓ per cent. off.

## Roller Chains.

Made of malleable iron, with malleable iron and steel pins.

These chains are made up with riveted pins, but coupling pins can be inserted at any interval desired.

The price of the chain includes the attachment links when not occurring but once in every foot.

| No. | Working strain. | Pitch of link. | Width of link. | Size pin. | Price per foot. |
|---|---|---|---|---|---|
| 52 | 500 | 1¼ | 1⅝ | 10/16 Malleable iron | $0.35 |
| 55 | 500 | 1⅜ | 1⅞ | 5/16 " " | .35 |
| 77 | 800 | 2¼ | 2 | 9/16 " " | .45 |
| 0 | 800 | 2 | 1⅛ | 5/16 " " | .45 |
| 9 | 700 | 3 | 1¾ | 9/16 " " | .50 |
| 88 | 1,200 | 2⅝ | 2⅛ | 7/16 " " | .65 |
| 17 | 1,200 | 2 9/16 | 2 | 7/16 " " | .70 |
| 18 | 1,400 | 3 | 2 | 1/2 " " | .80 |
| 12 | 1,500 | 3½ | 2 7/16 | 1/2 " " | .90 |
| 1 | 2,000 | 3 | 3 | 5/8 Steel. | 1.20 |
| 2 | 1,600 | 3 11/16 | 2⅞ | 5/8 " | 1.10 |
| 126 | 2,500 | 6 | 3⅛ | 11/16 " | 1.30 |
| 103 | 1,800 | 3⅛ | 2¾ | 5/8 " | 1.20 |
| 3 | 2,000 | 4 | 3¼ | 11/16 " | 1.30 |
| 114 | 2,000 | 4⅜ | 3½ | 11/16 " | 1.30 |
| 124 | 2,900 | 4 | 3⅝ | ¾ " | 1.70 |
| 5 | 3,000 | 5 | 3¾ | ⅞ " | 1.85 |

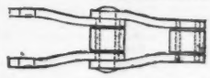
Discount, 45%.

## Roller Carrier Chains.

| No. | Working strain. | Pitch of link. | Size pin. | Price per foot. |
|---|---|---|---|---|
| 21 | 700 | 2½ " | 3/8 Malleable. | $ 40 |
| 22 | 1,000 | 3⅛ " | 7/16 Steel. | 65 |
| 23 | 1,400 | 4 " | ½ " | 90 |
| 24 | 2,800 | 6 " | ⅞ " | 1.25 |

Disc., 20%.

### STEEL THIMBLE ROLLER CHAIN.



Is used extensively for heavy driving purposes.

| No. | Work'g strain. | Sizes. Width of steel. | Thickness. | Pitch of link. | Pin. | Price |
|---|---|---|---|---|---|---|
| 17 | 1,800 lbs. | 1⅛ x | ¼ x | 2⅝ ins. | ½ in. | $1.65 |
| 14 | 3,500 " | 1⅜ x | ⅜ x | 3½ " | ⅝ " | 2.15 |
| 112 | 6,000 " | 2 x | ½ x | 4 " | ¾ " | 3.00 |
| 115 | 6,000 " | 2 x | ½ x | 5 " | ¾ " | 3.00 |
| 116 | 6,000 " | 2 x | ½ x | 6 " | ¾ " | 3.00 |

Disc., 20%.

### MEY-OBORN DETACHABLE CHAIN BELTING.

Made in 22 sizes to work on Standard Sprocket Wheels.

| No. | Links per foot. | Size pin. | Working strain. | Price per foot. | No. | Links per foot. | Size pin. | Working strain. | Price per foot. |
|---|---|---|---|---|---|---|---|---|---|
| 25 | 13.3 | 3-16 | 75 | .13 | 67 | 5.02 | 11-32 | 700 | .30 |
| 33 | 8.6 | 7-32 | 200 | .12 | 75 | 4.6 | 3-8 | 800 | .35 |
| 34 | 8.6 | 7-32 | 225 | .13 | 77 | 5.02 | 3-8 | 800 | .35 |
| 35 | 7.4 | 15-64 | 250 | .14 | 78 | 4.6 | 27-64 | 1,000 | .40 |
| 42 | 8.75 | 1-4 | 300 | .16 | 83 | 3. | 33-64 | 1,200 | .45 |
| 45 | 7.4 | 1-4 | 350 | .16 | 85 | 3. | 31-64 | 1,300 | .50 |
| 50 | 12. | 3-16 | 200 | .17 | 88 | 4.6 | 15-32 | 1,200 | .50 |
| 52 | 8. | 19-64 | 500 | .25 | 103 | 4. | 37-64 | 1,800 | .75 |
| 55 | 7.4 | 19-64 | 450 | .22 | 108 | 2.55 | 5-8 | 2,000 | .80 |
| 57 | 5.02 | 5-16 | 600 | .24 | 146 | 2. | 13-16 | 2,800 | 1.40 |
| 62 | 7.03 | 11-32 | 950 | .30 | 124 | 3. | 3-4 | 2,500 | 1.30 |

Disc. 25%.

## Crucibles.

Battersea Crucibles, Triangular.

| No. | Height. Inches. | Width. Inches. | Crucibles. Per doz. | Covers. Per doz. |
|---|---|---|---|---|
| S | 4½ | 4⅛ | $1.00 | $0.50 |
| T | 4 | 3¾ | 0.80 | 0.50 |
| U | 3½ | 3¼ | 0.60 | 0.40 |
| V | 3¼ | 2⅞ | 0.45 | 0.40 |
| W | 2⅞ | 2⅝ | 0.35 | 0.30 |
| X | 2½ | 2¼ | 0.30 | 0.30 |
| Y | 2⅛ | 2⅛ | 0.25 | 0.30 |
| Z | 1¾ | 1¾ | 0.20 | 0.30 |

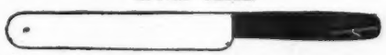
Battersea Muffles, any size, made to order.
See Illustration in advertisement.

| No. | Long. Inches. | Wide. Inches. | High. Inches. | Price. Each. |
|---|---|---|---|---|
| A | 7 | 3½ | 2½ | $ .60 |
| B | 7½ | 4⅜ | 2⅞ | .75 |
| C | 8 | 4¾ | 3 | .85 |
| D | 8½ | 5 | 3¼ | 1.00 |
| E | 9 | 5½ | 3⅝ | 1.15 |
| F | 10 | 6 | 4 | 1.25 |
| G | 11 | 4 | 3½ | 1.00 |
| H | 10½ | 5¼ | 3⅝ | 1.00 |
| J | 12 | 6 | 4 | 1.25 |
| K | 14 | 8 | 5 | 1.75 |
| L | 15 | 9 | 6 | 2.00 |

Export discount 15%.

## Cutlery.

KNIVES—TABLE.



Japanned iron handles, $10.70 per gross pairs.

| Cocobola handles. | Ebony handles. | Bone handles. | |
|---|---|---|---|
| 10.70 | 12.00 | 15.35 | gross pairs. |

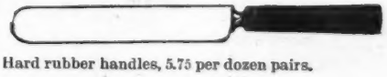
| | | | |
|---|---|---|---|
| 32.00 | 33.35 | 38.00 | " " |

| | | | |
|---|---|---|---|
| 34.70 | 36.00 | 45.00 | " " |

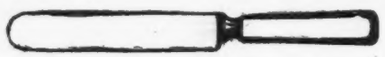
| | | | |
|---|---|---|---|
| 33.35 | 34.70 | 46.70 | Gross pairs. |

| | | | |
|---|---|---|---|
| 37.35 | 38.70 | 50.70 | " " |

| | | | |
|---|---|---|---|
| 40.00 | 41.35 | 53.35 | " " |



Hard rubber handles, 5.75 per dozen pairs.



Solid bone handles, 1.50 per dozen pairs.

Celluloid handles, 7.35 per dozen pairs.
Forks are made to match all above patterns, with either three or four prongs.
Discount 25 %.

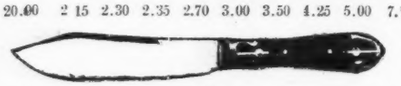
BUTCHERS'—COCOBOLA HANDLES.

| | Per dozen. | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 4 and 4½ in. | 5 in. | 5½ in. | 6 in. | 6½ in. | 7 in. | 8 in. | 9 in. | 10 in. |
| 1.15 | .... | .... | 1.20 | .... | .... | .... | .... | .... |

1.15 1.20 1.30 1.40 1.70 1.90 2.35 3.00 3.75 5.00

.... 1.45 1.60 1.70 2.00 2.35 2.80 3.25 4.00 6.00

2.00 2.15 2.30 2.35 2.70 3.00 3.50 4.25 5.00 7.50



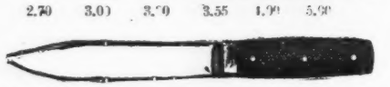
2.00 2.15 2.30 2.35 2.70 3.00 3.50 .... .. .

Discount 25 and 10 %.

HUNTING—EBONY HANDLES.

5½ in. 6 in. 6½ in. 7 in. 8 in. 9 in.
Per Dozen.

2.70 3.00 3.30 3.55 4.00 5.00



2.55 2.70 3.00 3.30 3.75 4.00 5.00
Discount, 25 and 10 %.
Per Dozen.

Putty knives, cocobola handles..... ..... $1.30@$1.60

SHEARS.

TAILORS'—JAPANNED OR NICKEL HANDLES.

Per pair.

| | | | |
|---|---|---|---|
| 12 in. | ..... | ..... | 6.00 |
| 12½ in. | .... | ..... | 7.00 |
| 13 in. | ..... | ..... | 8.00 |
| 13½ in. | ..... | | 9.00 |
| 14 in. | ..... | | 10.00 |
| 14½ in. | ..... | | 11.00 |
| 15 in. | .... | ... | 12.00 |
| 16 in. | ..... | | 14.00 |

Discount, japanned, 60 %; nickle, 45 %.

BENT TRIMMERS.

Per dozen.

| | | | |
|---|---|---|---|
| 6 in. | ..... | 13.00 | 10 in. ..... 27.00 |
| 7 in | .... | 15.00 | 11 in. ..... 30.00 |
| 8 in | ... | 17.00 | 12 in. ..... 33.00 |
| 9 in | .. | 22.00 | |

STRAIGHT TRIMMERS.

Per dozen.

| | | | |
|---|---|---|---|
| 6 in | ..... | 12.00 | 10 in. ... 25.00 |
| 7 in. | ..... | 14.00 | 11 in. ..... 30.00 |
| 8 in. | ..... | 16.00 | 12 in. ..... 33.00 |
| 9 in. | ..... | 19.00 | |

LADIES' SCISSORS.

Per dozen.

| | | | |
|---|---|---|---|
| 4½ in. | ..... | 10.00 | 6 in. .. .... 11.00 |
| 5 in. | ..... | 10.00 | 6½ in. ..... 12.00 |
| 5½ in. | ..... | 10.50 | 7 in. ..... 13.00 |

PAPER AND BANKERS'.

Per dozen.

| | | | |
|---|---|---|---|
| 9 in. | ..18.00 | 13 in. | .. 36.00 |
| 10 in. | ..25.00 | 14 in. | .. 42.00 |
| 11 in. | ..27.00 | 16 in. | ....54.00 |
| 12 in. | ..32.00 | 18 in | ..20.00 |

BARBERS—Per dozen.

| | | | |
|---|---|---|---|
| 7½ in. | ..... | 15.00 | 9 in. ..... 18.00 |
| 8 in. | ..... | 16.00 | 9½ in. ... .. 20.0 |
| 8½ in | ..... | 17.00 | |

SCISSORS.

BUTTON-HOLE.

5 and 5½in., 14 00 per dozen.

Discount, japanned, 70 and 10 % nickel, 60 and 10 %

PRUNING.

1 B., 9 in., 24 per dozen; 2 B. 8½ in., 21; 3 B., 7¾ in., 9.80.

No. 110,
10 in.,
$30 per doz
Dis., 40 and 5%.

PRUNING SHEARS FOR LONG HANDLES.
No. 1, $36 per dozen; No. $30 per dozen.
Discount, 40 and 5%.

Cutters.

| No. of cutter. | No. of knives. | Length in inches of knives. | Length in inches of feed cut. | Price. |
|---|---|---|---|---|
| 1 | 2 | 6¼ | ⅛, ¾ and 1⅛ | $18 00 |
| 2 | 2 | 7¼ | ⅛, ¾ and 1⅛ | 21.00 |
| 2½ | 1 | 7¼ | ⅝, ⅞, 1¼ and 1⅝ | 21.00 |
| 2½ | 2 | 7¼ | ⅛, ⅜, ⅝ and ⅞ | 23 00 |
| 3 | 1 | 8½ | ⅝, ⅞, 1¼ and 1¾ | 25.00 |
| 3 | 2 | 8½ | ⅛, ⅜, ⅝ and ⅞ | 27.00 |
| 4 | 1 | 10 | ⅝, ⅞, 1¼ and 1¾ | 30.00 |
| 4 | 2 | 10 | ⅛, ⅜, ⅝ and ⅞ | 33.00 |
| 5 | 2 | 10 | ⅛, ⅝, ⅞ and 1¼ | 35.00 |
| 6 | 2 | 11 | ⅛, ¾, 1¼ and 2 | 45.00 |
| 6½ | 2 | 11 | ⅛, ¾, 1¼ and 2 | 45.00 |
| 7 | 2 | 13 | ⅛, ¾, 1¼ and 2 | 60.00 |
| 7½ | 2 | 13 | ⅛, ¾, 1¼ and 2 | 60.00 |
| 10 | 2 | 16 | ⅛, ¾, 1¼ and 2 | 80.00 |
| 12 | 2 | 20 | ⅛, ¾, 1¼ and 2 | 100 00 |
| 11 | 2 | 11 | ⅛, ¾, 1¼ and 2 | 45.00 |
| 13 | 2 | 13 | ⅛, ¾, 1¼ and 2 | 60.00 |
| 16 | 2 | 16 | ⅛, ¾, 1¼ and 2 | 80.00 |
| 20 | 2 | 20 | ⅛, ¾, 1¼ and 2 | 100.00 |

The knife arbors for all sizes are made of machinery steel. 30 per cent. dis.

VEGETABLE—GALE'S.

| Size. | Weight of Fly Wheel, Pounds. | Will cut per hour. Pounds. | Price |
|---|---|---|---|
| No. 1½ | 20 | 1,500 | $12 |
| No. 2½ | 32 | 1,700 | 15 |
| No. 3½ | 32 | 1,700 | 15 |
| No. 4 | 42 | 2,000 | 18 |
| No. 5 | 50 | 3,000 | 25 |
| No 10 | 65 | 8,000 | 35 |

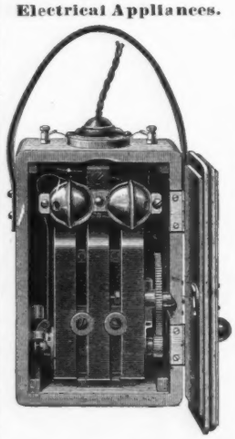
30% dis.

**Drill—Portable Hand Rock.**

Price, $225.

Dis., 25 and 2½%.

**Electrical Appliances.**



| | |
|---|---|
| 20,000 ohm Testing Generator | $10.00 |
| Pony Magneto Bell | 6.00 |
| Standard Magneto Bell | 7.50 |
| Standard Extension Bell | 4.00 |
| Pony Extension Bell | 3.00 |

Discount 40 per cent.

**Electroplate.**

| | Extra plate, per doz. | Double plate, per doz. | Triple plate, per doz. |
|---|---|---|---|
| Oyster forks | 7.00 | 9.00 | 11.00 |
| Sugar shells | 9.00 | 11.00 | 13.00 |
| Sugar tongs | 25.50 | 31.50 | 37.50 |
| Butter knives, twist or reversed handles | 10.50 | 12.50 | 14.50 |
| Nut picks | 4.75 | 6.00 | 7.25 |
| Pie knives, engraved blades | 42.00 | 51.00 | 60.00 |
| Soup ladles | 48.00 | 60.00 | 72.00 |

Dis. 60 and 2%.

Aesthetic medium fork.

| Tea spoons. | Table spoons. | Medium forks. |
|---|---|---|
| 7.50 | 15.00 | 15.00 per gross. |

Discount, 30 and 5 %.

| | 3 pcs. | 4 pcs. | |
|---|---|---|---|
| Children's sets *on cards*. | | | |
| Leader pattern, as per cut | 21.00 | 24.00 doz. | 60 and 5 % |
| Aesthetic pattern, as per cut | 5.75 | 7.25 doz. | 30 and 5 % |

SPOONS, FORKS, ETC., BEST PLATE ON HARD WHITE METAL

| | 5 oz. or extra plate. Tipd | Oval. | Perfect and Leader. |
|---|---|---|---|
| Tea spoons | 4.25 | 4.50 | 4.75 per doz |
| Dessert spoons | 7.50 | 8.00 | 8.50 " " |
| Table spoons | 8.50 | 9.00 | 9.50 " " |
| Coffee spoons | 4.25 | 4.50 | 4.75 " " |
| Dessert forks | 7.50 | 8.00 | 8.50 " " |
| Medium forks | 8.50 | 9.00 | 9.50 " " |

Discount, 60 and 5%.

Spoons and forks, German silver, tipped pattern.

| Tea spoons. | Table spoons. | Medium forks. |
|---|---|---|
| 22.50 | 45.00 | 45.00 per gross. |

Discount, 60 and 2½%.

Spoons and forks, made from brass, and silver plated or a coating of hard, white nickel.

CASTERS.

1,200—Dinner.

Dis., 60 and 5%. 232—Breakfast.

PICKLE DISHES

No. 144. 12 in. high, $3.50
No. 66. 10½ in. high, $2; assorted colored glass.
No. 155. 12 in. high, $4; assorted colored glass.
No. 146. 12½ in. high, $9; hand decorated glass.
No. 156. 12½ in. high, $6; hand decorated glass.

No. 146.

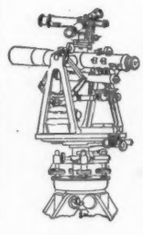
No. 255.

TEA SETS.

No. 255. 6 pieces, $35, quadruple plate.
No. 301. 4 pieces, $23, quadruple plate.
No. 1847. 6 pieces, $42, quadruple plate.

Dis., 60 and 5%.

**Engineering Instruments.**



| | |
|---|---|
| Full Engineer's Standard Transit. | |
| 7 in. graduated circle | $255 |
| 6 in. " " | 245 |
| 5 in. " " | 235 |
| 4 in. " " | 225 |
| Standard Engineer's Level, improved centre and seat attachment, 18 in. telescope | |
| Plain railroad level, 18 in. telescope | |

Dis., 5%.

## Explosives.

| | | |
|---|---|---|
| Dynamite, 75% | Nitro-Glycerine, per lb | .32 |
| " 60% | " " " | .25 |
| " 40% | " " " | .20 |
| Blasting powder A, per keg 25 lbs | | $2.40 |
| " " B, " " " | | 1.90 |
| Sporting powder, standard brands per keg 25 lbs | | 5.00 |
| " " " " " | 12½ lbs. | 2.75 |
| " " " " " | 6¼ lbs. | 1.50 |
| " " high grades " | 6¼ lbs. | 3.00 |
| " " " " per can | 1 lb | 60 |
| " " fancy brands " | 1 lb | 1.00 |

Discounts special for quantity.

| | | |
|---|---|---|
| Safety fuse, cotton, 12 M ft. in case | $2.85 | per M ft |
| " " single tape, 6 M ft. in case | 3.85 | " " |
| " " double tape " " | 4.85 | " " |
| " " triple tape " " | 5.60 | " " |

Discount 17½%.

| | |
|---|---|
| Detonating caps, triple force, 25 M. in case | $5.00 per M. |
| " " quintuple force, 25 M. in case | 7.50 per M. |
| Electrical exploders, 4 ft. wires | $3.00 per 100 |
| " " 6 " | 3.54 " |
| " " 8 " | 4.08 " |
| " " 10 " | 4.62 " |

Discount 15%. Long lengths to order.

| | No. | Capacity. | |
|---|---|---|---|
| Magneto Blasting Machines | 1 V. | 8 holes | $17.00 |
| " " " | 2 V. | 20 " | 25.00 |
| " " " | 3 L. | 20 " | 25.00 |
| " " " | 3 V. | 30 " | 30.00 |
| " " " | 4 V. | 60 " | 50.00 |

Discount 15%.

| | |
|---|---|
| Blasting cables | $5.00 each, discount 40% |
| " reels | 5.00 " " 20% |

## Flouring Mill Machinery.

20-inch New Era Mill for Wheat, Corn, and Middlings.

| Size. Inch. | Power. H. P. | Pulley. Inch. | Capacity Bush. |
|---|---|---|---|
| 20 | 4 to 10 | 14 × 7 | 12 to 40 |

| Speed. | Weight. Lbs. | Price. |
|---|---|---|
| 500 to 800 | 660 | 15 |

Farm and Plantations Mills.

| Diameter of burrs. | Power to drive. | Size of pulley. | Capacity per hour. | Revolutions per minute. | Weight. | Price. |
|---|---|---|---|---|---|---|
| | H. P. | | | | | |
| 14 in. | 2 to 4 | 9×5½ | 4 to 14 bushels | 600 to 1200 | 370 lbs. | $100 |
| 18 in. | 4 to 10 | 11×6¼ | 8 to 40 bushels | 400 to 700 | 600 lbs. | 130 |

The Dixey Mill—Stiff Spindle Style.

| Size. | Power. | Capacity. | Weight. Pulley. | Weight. Geared | Pulley. | Iron gear. | Mortise gear. |
|---|---|---|---|---|---|---|---|
| 18 | 4 to 6H.P. | 8 to 25 bu | 560 lbs | 650 | $130 | $165 | |
| 22 | 6 to 8 " | 12 to 30 " | 800 " | 1000 | 165 | 200 | |
| 26 | 8 to12 " | 16 to 40 " | 1100 " | 1500 | 185 | 220 | |
| 30 | 10 to15 " | 25 to 60 " | 1300 " | 1700 | 215 | 255 | |

GRINDING MILLS.

"Daisy," without Shaking Bolt, 170 pounds, 9 cubic feet, $40.

"Daisy," with Shaking Bolt, 185 pounds, 9 cubic feet, $48.

} Discount 25 per cent.

"The Union Mill."

| Diameter of Buhr Stones | Size of Pulleys Diam. | Face. |
|---|---|---|
| 12 in. | 8 in. | 6¼ in. |
| 16 " | 9 " | 7½ " |

| Horse Power | Capacity in B'sh's | Speed | Without Bolt | With Bolt | Sacking Elevator, Extra | Extra Metal Buhrs |
|---|---|---|---|---|---|---|
| 8 to 10 | 12 to 30 | 1200 to 1500 | $90.00 | $105.00 | $15.00 | $1.20 pair |
| 10 to 15 | 20 to 50 | 1000 to 1600 | 160.00 | 178.00 | 17.50 | 1.50 " |

NOISELESS ROLLER MILLS FOR FLOUR MILL USE.

4-roll or double machines.

| Size, inches. | Weight, lbs. | Price in New York, net. All smooth. | 1 pair smooth, 1 pair corrugated. | All corrugated. |
|---|---|---|---|---|
| 6×12 | 1,480 | $302 | $307 | $312 |
| 6×16 | 1,680 | 334 | 339 | 344 |
| 6×20 | 1,880 | 367 | 372 | 377 |
| 9×14 | 2,800 | 377 | 383 | 390 |
| 9×18 | 3,500 | 406 | 414 | 422 |
| 9×24 | 4,150 | 455 | 466 | 477 |
| 9×30 | 5,850 | 510 | 525 | 539 |

NOISELESS ROLLER MILLS FOR CORN-GRINDING ONLY.

| Size inches. | Weight lbs. | Capacity per hour bushels. | Price in New York |
|---|---|---|---|
| 9 × 14 | 2,600 | 20 to 35 | $390. |
| 9 × 18 | 3,050 | 30 " 50 | 422. |
| 9 × 24 | 3,350 | 40 " 80 | 477. |

6 × 8 Corn Meal Roller Mill ..... $85.

COMPLETE FLOUR MILLS ON MILLSTONE SYSTEM.

| Size of stone ins. | Power needed. | Capacity flour per hour lbs. | Weight boxed. | Price net in New York |
|---|---|---|---|---|
| 20 | 6 h. p. | 200 | 4,500 lbs. | $550. |
| 26 | 7 " | 250 | 4,500 " | 650. |
| 30 | 10 " | 300 | 5,500 " | 750. |
| 36 | 11 " | 375 | 6,500 " | 850. |
| 42 | 12 " | 450 | 8,000 " | 950. |

COMPLETE FLOUR MILLS ON THE ROLLER PROCESS.

| Capacity in flour 24 hours. | Power needed. | Weight approx. in lbs. | No. of estimate. | Net price in New York. |
|---|---|---|---|---|
| 25 bbls. | 20 h. p. | 14,000 | 15 | $2,200 |
| 40 " | 22 " | 22,000 | D | 2,400 |
| 50 " | 25 " | 32,000 | C | 3,200 |
| 75 " | 35 " | 48,000 | B | 4,700 |
| 100 " | 45 " | 60,000 | A | 5,500 |

The Nordyke Bradford Portable Mill.

| Size of stones, In. | Grinding capacity. Corn, bu. per hour. | Wheat bu. per hour. | Horse-power. | Weights. Sing'l gear. | Double gear. | Pulley mill. | Geared mills. Iron wh'ls. | Mortise wh'ls. |
|---|---|---|---|---|---|---|---|---|
| 18 | 8 to 10 | ..... | 4 | 550 | 625 | $130 | $165 | $180 |
| 20 | 10 to 12 | ..... | 5 | 600 | 700 | 140 | 175 | 190 |
| 22 | 12 to 15 | ..... | 5 | 700 | 850 | 160 | 190 | 210 |
| 24 | 15 to 18 | ..... | 6 | 900 | 1050 | 175 | 210 | 225 |
| 26 | 18 to 20 | 8 to 10 | 8 | 1200 | 1400 | 185 | 225 | 250 |
| 30 | 20 to 25 | 10 to 12 | 10 | 1500 | 1700 | 225 | 255 | 290 |
| 36 | 25 to 30 | 14 to 17 | 12 | 1800 | 2100 | 315 | 355 | 380 |
| 42 | 35 to 40 | 19 to 21 | 15 | 2000 | 2300 | 390 | 435 | 460 |

| Driving pulley. | Revolutions per minute. | Length of belt above floor. | Approximate shipping weight | Price. |
|---|---|---|---|---|
| 10" × 5¼" | 400 to 500 | 14' | ..... | $500.00 |
| 14" × 6¼" | 350 to 450 | 18' | 2600 lb. | 600.00 |
| 14" × 7¼" | 350 to 450 | 18' | 3050 lb. | 650.00 |
| 14" × 8¼" | 350 to 450 | 18' | 3350 lb. | 735.00 |

## Flue Cleaner.

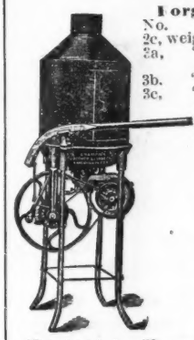
Hurley's Automatic Steam Flue Cleaner.

| No. | Outside diam. of tubes. | With hose clamps. | Globe Valves. | Best 4-ply steam hose. Per foot. |
|---|---|---|---|---|
| 1 | 1½ to 2 | $5.00 | ½, 95 cents | ¾, 67 cents. |
| 2 | 2 to 2½ | 6.25 | ½, 95 cents | ¾, 67 cents. |
| 3 | 2½ to 3 | 7.50 | ¾, $1.30 | ¾, 67 cents. |
| 4 | 3 to 3½ | 8.75 | 1, 1.75 | 1¼, 83 cents. |
| 5 | 3½ to 4½ | 10.00 | 1¼ 2.90 | 1¼, $1.04 |

Dis. on flue cleaners, 60 and 10%.
Dis. on steam hose, 50%, good to 90 lbs steam.

Tube cleaner, "The National." Per inch, $1. Discount, 60%.

## Forges (Portable).



No. 2c, weight, 155 lbs. 21×27 hearth ..$42.00
" 2a, " 80 " 18 in. diam. hearth..... 27.00
" 3b. " 75 " 18 " ..... 24.00
" 3c, " 85 " 18 " ..... 30.00
No. 6a, weight 45 lbs., 14 in. diam. hearth..... 18.00
No. 6B, weight 15 lbs. 14 in. diam. hearth..... 16.00
Dis. 60%.

No. 1, half open hood; height 29 in.; fan, 10 in.: hearth, 21×27 in.; weight, 140 lbs.; price, $40.

No. 2, closed hood; capacity same as No. 1; weight, 150 lbs; price, $42.

No. 4, half open hood; height, 33 in.: size of hearth, 18 in. diameter; weight, 75 lbs; price, $27.

Nos. 4 and 5 will produce a welding heat on iron 1½ inches in diameter in five minutes, and do heavier work if required, but on account of size of fire place and general capacity, are specially recommended for use of die sinkers, model and tool makers, plumbers, tinsmiths, jewelers, dentists, locksmiths and small hardware manufacturers, for heating and tempering tools of all kinds.

No. 5, same size and capacity as No. 4; weight, 60 lbs. Price, $24.

Discount on application.

## Fruit Evaporator.

No. 1. Evaporator ..... $3
No. 2. Fruit Drier and Baker, with Bleacher attachment. Weight, 225 lbs. Capacity, 5 to 7 bushels apples per day; 21 in. deep, 26 in. wide, 5½ ft. high; 12 trays, 22 × 22; 40 square feet drying surface. Complete..... ..... $50
No. 3. Capacity, 15 to 20 bushels per day..... 100
No. 4. Capacity, 20 to 30 bushels per day..... 165
Dis., Nos. 1 and 2 = 25%. Nos. 3-4 = 20%.
Boxing, extra:
No. 1, $3.00; No. 2, $5.00; No. 3, $7.50; No. 4, $12.50.
Freight to New York:
No. 1, $4.00. No. 2, $6.00; No. 3, $12.00; No. 4, $18.00.

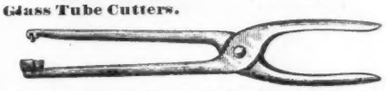
## Gaskets.

Corrugated Copper.

Price, 2 cents per square inch, less 30 per cent. discount for home trade.

Less 60% discount for export trade.

## Glass Tube Cutters.



One Arm Carries Rotary Cutter Price, $2.50 each.

## Glassware.

Dis. 5%.

| | | | |
|---|---|---|---|
| 6-in | owl and cover, per doz | | $2.75 |
| 7-in | " | " " | 3.75 |
| 8-in. | " | " " | 5.00 |
| 9-in. | | " | 7.00 |
| 10-in. | | " " | 9.00 |

12

13 15

13. Nappy, 4½-inch., per doz., 50c.; 6-inch., per doz., $2; 8-inch., per doz., $4.

14. Cream Pitcher, 1 pint, per doz., $1.25; one quart per doz., $2.75; 3 pints, per doz., $4.00.

15. Pint Pitcher, per doz., $1.50; quart pitcher, per doz. $2; 3 pint pitcher, per doz., $3.00.

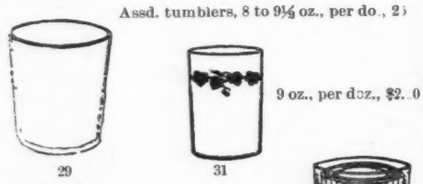
16 17

16. Flange Butter and Cover, per doz., $1.50.
17. Water Set, per doz., sets of 60 pieces, $7.50.

18. Cheese Dish and Cover, 8 in. per doz., $4.50.
20. Quart Water Bottle, per doz., $4.50.
19. Ind. Salts; per gross, $2.00. Assorted patterns.
21. 4 Bottle Castors, per doz., $6.50; 3 bottle, per doz. $4.50.

22. Berry Dish, 4½-inch, per doz., 50c.; 10-inch, per doz. $1.
23. Butter Dish and Cover, per doz., $1.25.
24. Butter Dish and Cover, per doz., 75c.

25. Candlesticks, per doz., $1.75. 26. Glass Slipper and tray for Flowers. per doz., $1. 27. Jam Jar and Cover 1 qt., per doz., $2.50; ½ gal., per doz., $3.25; ¾ gal., per doz., $4; 1 gal., per doz., $5; 1½ gals., $9; 2 gals., per doz., $12. 28. Pocket Flask, 1 pint, $1.

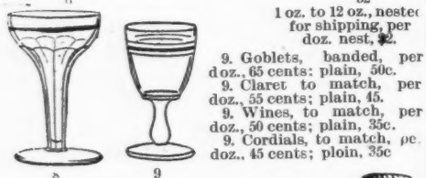


Assd. tumblers, 8 to 9½ oz., per doz., 25

9 oz., per doz., $2.00

11 oz., assorted patterns, per doz., 25 cts.

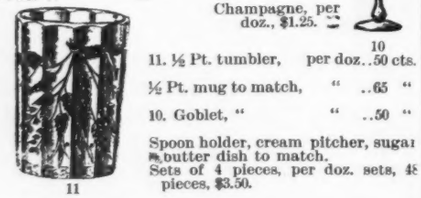
1 oz. to 12 oz., nested for shipping, per doz. nest, $2.



9. Goblets, banded, per doz., 65 cents; plain, 50c.
9. Claret to match, per doz., 55 cents; plain, 45.
9. Wines, to match, per doz., 50 cents; plain, 35c.
9. Cordials, to match, per doz., 45 cents; ploin, 35c

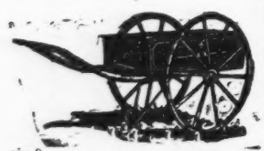
No. 10.
Goblets, per doz., 50 cts.
Claret, " 45 "
Wine " 35 "

No. 8.
Banded, open, hollow stem.
Champagne, per doz., $1.25.



11. ½ Pt. tumbler, per doz. .50 cts.
½ Pt. mug to match, " .65 "
10. Goblet, " " .50 "
Spoon holder, cream pitcher, sugar & butter dish to match.
Sets of 4 pieces, per doz. sets, 48 pieces, $3.50.

**Hand Carts**



No. 0 42 wheel in. tread, 1 in. axle, box 48x28x10 deep, $10.50.
No. 1, 36 wheel, 1 in. tread, ⅞ in. axle, box 40x23x10 deep, $9.00.
No. 2, 30 wheel, ¾ in tread, ¾ in. axle, box 32x20x9 deep, $8.25.

With Wagon-Seat Spring.

No. 6, same sizes as No. 0.....$12.00
" 7, same sizes as No. 1..... 10.50
" 8, " " " No. 2..... 9.75

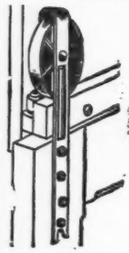
With Third Wheel, Without Spring.

No. 3, same sizes as No. 0.....$12.00
" 4, " " " No. 1..... 10.50
" 5, " " No. 2..... 9.50

## Hardware Specialties.

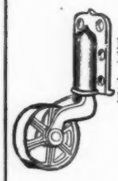
AUGERS.
Patent Adjustable Hollow. No. 3.
Cuts from ¼ to 1¼, pivoted jaws, graduated scale to 1-16ths, per doz., $60.00
Discount, 15 and 10%.

BENCH HOOK.
Patent, adjustable and reversible
List $9 dozen, ½ dozen in box.
Discount, 30 and 10%.

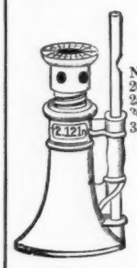


BARN DOOR HANGER.
4 in., per doz. pairs.....$12.00
5 " " " ..... 14.40
Track, per foot..... .08
One dozen pairs in case.
Dis., 50 and 10%.

BLACKSMITH'S TONGS.
Swivel Jaw.
No. 1, 16 in., per doz.....$10.00
" 2, 18 " " ..... 10.00
Dis. 20 and 10%.



CASTERS.
Swivel Store Truck
No. 20, japanned, 4 in. wheel, each..... .55
No. 25, " 5 " " " ..... .75
Noiseless turned wheel.
No. 30, japanned, 4 in. wheel, each..... 1.30
No. 35, " 5 " " " ..... 1.60
Discount, 60%.

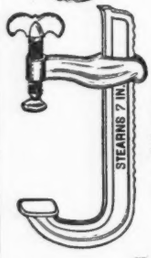


JACK SCREWS.
New pattern wrought iron screw.

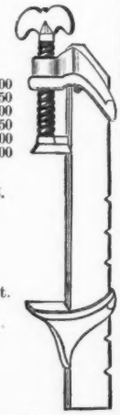
| No. | Rise of screw. | High. | Diameter screw. | Price. |
|---|---|---|---|---|
| 20 | 4½ in. | 10 in. | 2 in. | $4.50 |
| 25 | 6½ " | 12 " | 2 " | 5.25 |
| 30 | 8½ " | 14 " | 2 " | 5.75 |
| 35 | 11½ " | 16 " | 2 " | 6.50 |

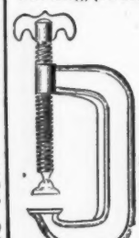
Discount, 40%.

Store Truck, stationary.
No. 50, 5-inch wheel, 1½ inch wide each, $1.05.
No. 60, 5-inch, extra heavy, 1½ inch wide, each $1.50.
Discount, 25%.



SCREW CLAMPS.
Adjustable.
3 in., per doz.....$4.00
5 " " ..... 6.50
7 " " ..... 9.00
9 " " .....10.50
12 " " .....15.00
16 " " .....20.00
½ doz. in box.
Discount, 20 and 10%.





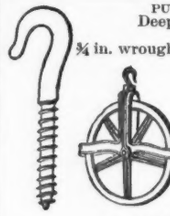
CLAMPS.
New Door Frame.
3 ft. long, per doz., $8 list; $5 per doz. net.

Malleable Iron Screw Clamps.

| Per Doz. | | Per Doz. | |
|---|---|---|---|
| 3 in | $7.00 | 7 in | $20.00 |
| 4 " | 10.00 | 8 " | 25.00 |
| 5 " | 12.00 | 9 " | 27.50 |
| 6 " | 16.00 | 10 " | 30.00 |

3, 4, 5, 6 in., ½ doz. in box.
Dis., 70%.

WINDOW SCREEN FRAMES.
Patent Japanned Corners.
No. 25, 36 by 36 corners and screws, without bead, per doz., $2.50.
No. 25, 36 by 36 corners and screws, with bead, per doz., $2.90.
No. 35, 42 by 42 corners and screws, without bead, per doz., $2.90.
No. 35, 42 by 42 corners and screws, with bead, per doz., $3.30.
Black satin stain, sticks ⅞ by 1 in.
Dis., 25, 10 and 5%.



PULLEY HOOK (New Floor.)
Deep cut thread, forged point.
Per doz.
¾ in. wrought iron, 8 in. long, list..... $1.90
net..... 1.00

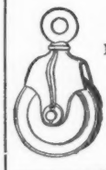
WELL WHEEL.
New pattern.
Japanned.

| In. | 8 | 10 | 12 | 14 | 16 |
|---|---|---|---|---|---|
| Pr.d. | 7.00 | 9.50 | 12.50 | 20.00 | 30.00 |

Discount, 70%.

PULLEYS.
Side, No. 45, Japanned.

| Inches... | 1 | 1½ | 2 | 2½ | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|
| Per doz.. | .90 | 1.00 | 1.60 | 2.40 | 3.50 | 9.00 | 15.00 |

2 inch and under, 2 dozen in box; 2½, 3 and 4, 1 dozen in box; 5 inch, ½ dozen in box.
Discount, 70%.

HAY FORK PULLEY.
New pattern.
No. 15, 5 in. iron wheel.....per doz. $4.00
25, 5 in. wood " ..... " 4.50
66, 6 in. " " ..... " 6.00
4 dozen in case, 8 dozen in barrel.

No. 15, per dozen, $1.75 net.

SHEAVES.
Patent Common
Turned and polished iron wheels, round corners, brass pin, one set in box.
2½ inch.....$1.50
3 " ..... 1.60
4 " ..... 2.00
5 " ..... 2.60
Discount, 60%.

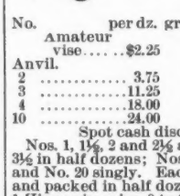
SINKS.
All 6 inch deep.

| | | | |
|---|---|---|---|
| 14 × 20 in.... | $1.50 | 18 × 30 in.... | $2.50 |
| 15 × 25 in.... | 1.75 | 18 × 32 in.... | 3.00 |
| 15 × 27 in.... | 2.00 | 18 × 36 in.... | 3.00 |
| 16 × 24 in.... | 1.80 | 20 × 30 in.... | 3.00 |
| 16 × 28 in.... | 2.10 | 20 × 36 in.... | 3.70 |
| 17 × 30 in.... | 2.25 | 20 × 40 in.... | 4.00 |
| 18 × 24 in.... | 2.10 | | |

Discount, 60 and 10%.

SPOKE POINTERS.
Per doz.
No. 1, points 1⅞ in. diameter, $9.00
No. 2, points 2⅝ in. diameter, $15.00
Discount, 15 and 10%.
½ dozen in box.

VISE.
(Bench Vise, Steel Jaws.)
3½ in. opens 5 in., weight 12 lbs.
List price, each.$4.00
Net " " .. 1.60



Silent Saw Vise.
No. 10., 10 in. jaw, per doz....$15.00
Dis., 33⅓%.

| No. | per dz. | gr., lbs. |
|---|---|---|
| Amateur vise | $2.25 | 70 |
| Anvil. | | |
| 2 | 3.75 | 200 |
| 3 | 11.25 | 615 |
| 4 | 18.00 | 1,350 |
| 10 | 24.00 | 1,675 |

| No. Clamp. | per dz. | gr., lbs. |
|---|---|---|
| 1½ | 3.00 | 80 |
| 2½ | 5.00 | 220 |
| 3½ | 14.25 | 700 |
| 4½ | 21.00 | 1,425 |
| Combination hand | 5.25 | 85 |

Spot cash discount, 33, 20 and 2, f.o.b.
Nos. 1, 1½, 2 and 2½ are packed in dozens; Nos. 3 and 3½ in half dozens; Nos. 4, 4½ and 10 in quarter dozens, and No. 20 singly. Each hand vise is put up in neat box and packed in half dozen lots.
1 Hinge pipe vise, 0 to 2 in. pipe.....Each $10.00
2 " " 0 to 4 in. pipe..... 20.00
1 Malleable pipe vise, 0 to 2 in. pipe..... 8.00
1 Combination pipe and bench vise, 0 to 2 in. pipe...16.00
Discount, 50%.

WRENCHES.
Cces Wrenches.

BLACK.
Knife Handle.

| Size. | ₱ doz. | Size. | ₱ do | ₱ doz. |
|---|---|---|---|---|
| 6 inch | $9.00 | 10 " | 12.00 | 24.00 |
| 8 " | 10.00 | 12 " | 14.00 | 30.00 |
| | | 15 inch | | |
| | | 18 " | | |
| | | 21 inch | 36.00 | |

BRIGHT.
Knife Handle.

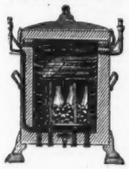
| | | | | | |
|---|---|---|---|---|---|
| 4 inch | $10.00 | 10 inch | 14.00 | 18 inch | 32.00 |
| 6 " | 10.00 | 12 " | 16.00 | 21 " | 38.00 |
| 8 " | 11.00 | 15 " | 26.00 | | |

Discount, 55, 10, 7½ and 3 %.

Coes Mechanics' Screw Wrenches, same list, less 50, 10, 10, 7½ and 3 %.

Patent Screw Wrench, same list. Dis, 50, 10, 7½ and 3%.

**Ice Machines (Family).**



No. 1, Ice machine, ice and ice cream molds, 1 lb. ice, $15.00.

No. 2, Ice machine, ice and ice cream molds, 1½ lbs. ice, $20.00.

No. 3, Ice machine, ice and ice cream molds, 1 carafe 1 bottle holder, 2 lbs ice, $26.50.

No. 4, Ice machine, ice and ice cream molds, 2 carafe 1 bottle holder, 4 lbs. ice, $33.00.

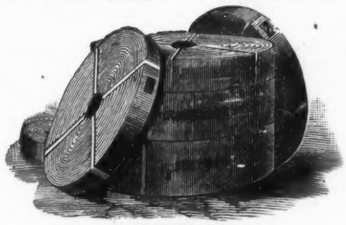
No. 5, Ice machine, ice and ice cream molds, 3 carafe 1 bottle holder, 6 lbs. ice, $40.00.

No. 6, Ice machine, ice and ice cream molds, 4 carafe, 1 bottle holder, 9 lbs. ice, $46.50.

No. 7, Ice machine, ice and ice cream molds, 5 carafe, 1 bottle holder, 12 lbs. ice, $60.00.

Siberia, 18 lbs., $120. Dis., 20 and 10%.

**India Rubber Goods.** MECHANICAL.



RUBBER BELTING.

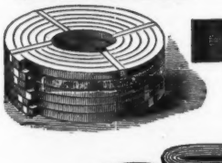
| Inches. | 2 ply per foot. | 3 ply per foot. | 4 ply per foot. | 5 ply per foot. | 6 ply per foot. |
|---|---|---|---|---|---|
| 1 | $0.07 | ..... | ..... | ..... | ..... |
| 1¼ | 0.09 | ..... | ..... | ..... | ..... |
| 1½ | 0.11 | ..... | ..... | ..... | ..... |
| 2 | 0.15 | $0.17 | $0.21 | ..... | ..... |
| 2½ | 0.18 | 0.22 | 0.26 | ..... | ..... |
| 3 | 0.22 | 0.26 | 0.31 | ..... | ..... |
| 3½ | 0.26 | 0.30 | 0.37 | ..... | ..... |
| 4 | 0.30 | 0.34 | 0.42 | ..... | ..... |
| 4½ | 0.33 | 0.39 | 0.47 | ..... | ..... |
| 5 | 0.36 | 0.43 | 0.52 | ..... | ..... |
| 6 | 0.43 | 0.52 | 0.62 | ..... | ..... |
| 7 | 0.51 | 0.60 | 0.73 | ..... | ..... |
| 8 | 0.59 | 0.70 | 0.84 | $1.05 | $1.25 |
| 9 | 0.67 | 0.80 | 0.95 | 1.18 | 1.42 |
| 10 | 0.75 | 0.90 | 1.07 | 1.33 | 1.60 |
| 11 | 0.83 | 1.00 | 1.18 | 1.47 | 1.77 |
| 12 | 0.91 | 1.08 | 1.30 | 1.62 | 1.95 |
| 13 | 1.00 | 1.18 | 1.42 | 1.77 | 2.13 |
| 14 | 1.08 | 1.28 | 1.54 | 1.92 | 2.31 |
| 15 | 1.16 | 1.38 | 1.66 | 2.07 | 2.49 |
| 16 | 1.25 | 1.50 | 1.78 | 2.22 | 2.67 |
| 18 | 1.41 | 1.70 | 2.02 | 2.52 | 3.03 |
| 20 | 1.58 | 1.90 | 2.26 | 2.82 | 3.39 |
| 22 | 1.76 | 2.12 | 2.52 | 3.15 | 3.74 |
| 24 | 1.96 | 2.36 | 2.80 | 3.50 | 4.20 |
| 26 | 2.18 | 2.60 | 3.08 | 3.85 | 4.62 |
| 28 | 2.42 | 2.84 | 3.36 | 4.20 | 5.04 |
| 30 | ..... | ..... | 3.64 | 4.55 | 5.46 |
| 32 | ..... | ..... | 3.92 | 4.90 | 5.88 |
| 34 | ..... | ..... | 4.20 | 5.25 | 6.30 |
| 36 | ..... | ..... | 4.48 | 5.60 | 6.72 |
| 38 | ..... | ..... | 4.76 | 5.95 | 7.14 |
| 40 | ..... | ..... | 5.04 | 6.30 | 7.56 |
| 42 | ..... | ..... | 5.32 | 6.65 | 7.98 |
| 44 | ..... | ..... | 5.60 | 7.00 | 8.40 |
| 46 | ..... | ..... | 5.88 | 7.35 | 8.82 |
| 48 | ..... | ..... | 6.16 | 7.70 | 9.24 |
| 50 | ..... | ..... | 6.44 | 8.05 | 9.66 |
| 52 | ..... | ..... | 6.72 | 8.40 | 10.08 |

Dis. Reliance, 60 and 5. Dis. Royal, 60, 10 and 10. Dis Manhattan, 70 and 5. See Leather Belting, page 3; Link Belting, page 9.

PACKING.

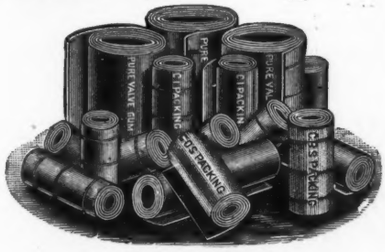
Piston Packing.

Round Piston Packing Per lb. 85c. Discount, 60, 10 and 5 per cent.



Square Piston Packing.

Price same as above. Round and square piston packing is made in lengths of twelve or twenty-four feet.




Steam Packing.
Cloth Insertion, Rubber Outside.
Cloth Insertion, Cloth on one or both sides.

| Thickness. | 1-Ply. | 2-Ply. | 3-Ply. | 4-Ply |
|---|---|---|---|---|
| 1-64 inch | 70 cts. | ..... | ..... | ..... |
| 1-32 " | 65 cts. | ..... | ..... | ..... |
| 1-16 " | 60 cts. | 63 cts. | 66 cts. | ..... |
| 3-32 " | 55 cts. | 58 cts. | 61 cts. | ..... |
| 1-8 " | 55 cts. | 55 cts. | 58 cts. | 61 cts |
| 3-16 " | 55 cts. | 55 cts. | 55 cts. | 58 cts. |
| 1-4 " | 55 cts. | 55 cts. | 55 cts. | 55 cts. |

One-ply of cloth to every 1-16 inch thickness.

Three cents per pound additional will be charged for each extra ply of cloth. Each cloth, whether insertion or on outside, to count as one ply.

All cloth insertion or plain packing is one yard wide and any length desired.

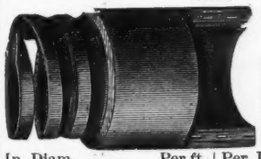
Wire insertion packing, all thicknesses, per lb, 50 cents.

Discounts: Reliance, 70 & 10; Royal, 60, 10 & 10; Manhattan, 60 per cent.

Square Piston Packing. Rubber back, per pound $1. Discount 60 per cent. Best only.

Square piston packing rubber back is made in lengths of twenty feet.

HOSE.



Improved "Smooth Bore" Rubber Suction Hose.

On spiral flat or round tinned steel wire.

| In. Diam. | Per ft. | Per. Diam. | Per ft. |
|---|---|---|---|
| inch | 6.50 | 7 inch | $13.50 |
| 4½ " | 7.50 | 7½ " | 15.00 |
| 5 " | 8.50 | 8 " | 16.50 |
| 5½ " | 9.50 | 9 " | 19.50 |
| 6 " | 10.50 | 10 " | 22.50 |
| 6½ " | 12.00 | 12 " | 27.50 |

Suction hose discount: Reliance, 50 and 10%; Royal, 60, 10 and 5%; Manhattan, 70 and 5%.

| Int. Diam. | Per. ft. |
|---|---|
| ¾-inch | $ .77 |
| 1 " | 1.00 |
| 1¼ " | 1.25 |
| 1½ " | 1.65 |
| 1¾ " | 2.10 |
| 2 " | 2.50 |

SUCTION HOSE.

On spiral brass or iron wire

RUBBER HOSE.

Conducting Hose—Two-ply.

| Int. diam. | Per ft. | Int. diam. | Per ft. | Int. diam. | Per ft |
|---|---|---|---|---|---|
| ⅛ in | $0.20 | 2 in | $0.66 | 5 in | $1.65 |
| ¾ in | 25 | 2¼ in | 75 | 6 in | 1.98 |
| 1 in | 33 | 2½ in | 83 | 7 in | 2.31 |
| 1¼ in | 42 | 2¾ in | 92 | 8 in | 2.64 |
| 1½ in | 50 | 3 in | 99 | 9 in | 2.97 |
| 1¾ in | 58 | 4 in | 1.32 | 10 in | 3.33 |

HYDRANT HOSE—THREE-PLY.

| | | | | | |
|---|---|---|---|---|---|
| ½ in | $0.25 | 1½ in | $0.60 | 2½ in | $1.00 |
| ¾ in | 30 | 1¾ in | 70 | 2¾ in | 1.10 |
| 1 in | 40 | 2 in | 80 | 3 in | 1.20 |
| 1¼ in | 60 | 2¼ in | 90 | 3½ in | 1.40 |
| | | | | 4 in | 1.60 |

Discount—Reliance, 60; Royal, 70; Manhattan, 70 and 10 per cent.

GASKETS AND RINGS.

Fibrous.

⅛ inch thick, or less, per lb. $0.90

5-32 inch thick, and upwards, per lb. $0 80

Cloth Insertion.

1-16 inch thick, or less, per lb. $1.25

3-32 inch thick, and upwards. per lb. $1.00

There is one ply of cloth to every 1-16 in thickness.

Five cents per pound additional for each extra ply of cloth. Dis., 60, 10 and 5%.

CORRUGATED RUBBER MATTING.

Rolls 1 yard wide, 30 yards long, cut to any size required.

**Indurated Fibre Ware.**

SPITTOONS.

| | Doz. |
|---|---|
| 16 in. dia., 8 in. high | $24.00 |
| 12½ in. dia., 5½ in. high | 10.80 |
| 9 in. dia., 5 in. high | 7.80 |

WASH TUBS.

| | | | |
|---|---|---|---|
| No. 0, 23 in | ⅛ | 12 | 27.00 |
| No. 1, 21 in | ⅛ | 10½ | 24.00 |
| No. 2, 19½ in | ⅛ | 9 | 21.00 |
| No. 3, 18½ in | ⅛ | 9 | 18.00 |
| Nos. 0, 1, 2 and 3, nested | 1 | n. 3½ | 7.50 |
| Nos. 1, 2, and 3, nested | ⅛ | 9¾ | 5,25 |

CHAMBER PAILS.

12 in. dia., 9 in. deep, 3 gal. 16.00

WATER COOLERS.

| | Doz. |
|---|---|
| 2 gal | $32.00 |
| 4 " | 40.00 |
| 5 " | 44.00 |
| 6 " | 48.00 |
| 8 " | 64.00 |
| 10 " | 80.00 |
| 12 " | 96.00 |
| 15 " | 120.00 |

Dis. on all 40%

| Pails. | No. doz. in crate. | Cubic feet. | Price per doz. |
|---|---|---|---|
| Ladies' or Weaver's pails, 6 qt | 1 | 2¾ | $5.35 |
| Half or buggy pails, 6 qt | 1 | 3 | 4.8 |
| Star pails (standard plain), 12 qt., stenciled "for fire only" without extra charge | 1 | 3½ | 5.40 |
| Deck or Mason's pails (same size as Star, but heavier, with heavy wire bail) | 1 | 4 | .60 |
| Railroad or fire pails, 14 qt. (also stenciled "fire" without extra charge) | ½ | 3 | 7.80 |
| Fire pails, round bottoms | 1 | 4 | 7.80 |
| Milk pails, 14 qt | 1 | 4 | 7.80 |
| Stable pails, flush bottom, heavy wire bail, 14 qt | 1 | 4 | 7.80 |
| Stable pails, 16 qt., same as above | ½ | 3½ | 8.40 |
| " 18 " " | ½ | 3¾ | 10.70 |
| " 20 " " | ½ | 4 | 12.00 |
| Covers for fire or star pails | | 1 | 3.35 |

KEELERS

| | | Doz |
|---|---|---|
| A—20 in. | 7 in. deep | 16.20 |
| B—19 " | " " | 15.00 |
| C—18½ " | " " | 14.00 |
| 1—17½ " | " " | 13.20 |
| 2—15½ " | 6 in. " | 12.00 |
| 3—13½ " | 5 in. " | 10.20 |
| 4—12 " | 4 in. " | 9.00 |

MILK OR VEGETABLE PANS.

13½ in. dia 3¼ in. deep, 6 quarts, $3.60 per doz.

WASH BASINS.

| | Doz. |
|---|---|
| 12½ in | $3.60 |

**Lamps.**

1 4 2

3

1. Drummond Electric Hanging Lamp, 300 candle power, complete. doz., $42.00.

3. The electric lamp, 60 candle-power. With decorated shades, nickel, per doz. $22.00

With opal plain shades, nickel, per doz. 18.00.

With decorated shades, brass, per doz. 21.00.

With opal plain shades, brass, per doz 17.00.

4. Lamp chimney patent for Sun burners.

Per doz. No. 0, 40 cents. No. 1, 50c. No. 2, 65c.

2. Hitchcock nickel table lamp (No. 654), each $3.25
" " hanging " 656 " 3.50
" " bracket " 651 " 3.50
" " " with reflector 653 " 3.75
" French bronze bracket, with reflector, No. 653, each $3.75.

5. Hanging lamp. $12 per doz.

6. Clock night lamp. $21 per doz.

7. Hand lamp. $1.50 per doz.

Miners'.

Brass, Collar and Breast in one piece, Spout and Body in one piece.

Price, $8 per gross net.

| Demmler Bros. | Doz. |
|---|---|
| "Cherry" Miners' Lamps, double spout | $2.00 |
| " Drivers' " " " | 2.70 |
| " " " single " | 2,50 |

Harp, complete, with square tin shade, per doz., $9.50.
Complete, with Burner and chimney, per doz., $1.50.
Hurricane lanterns 25 cents extra with guards.
875, ⅝ wick, without guards, per doz., $5.00.
876, square safety lifting globe, per doz., $5.50.
877, ⅝ wick, safety lifting globe, per doz., $6.75.
Nickel plated diamond reflecter road ing lamp, 30 candle-power, $13.50 per doz
Net
Illuminated night clock $27. per doz.

PAPER LAMPS.

Lined with oil proof composition.

| | | | | |
|---|---|---|---|---|
| No. 0. | Height, 2½ in., | per doz. | | $1.00 |
| No. 1. | " 3 | " | | 85 |
| No. 2. | " 3¾ | " | | 1.25 |
| No. 3. | " 5 | " | | 1.50 |
| No. 4. | " 6½ | " | | 1.75 |

33

**Laundry Appliances.**

Washing Machine.

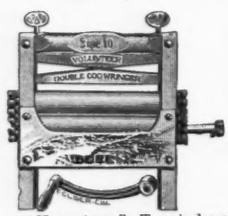
THE CATARACT.

All Metal.

Cubic Measurement 15 ft.

Price $20.

Dis., 25%.



Rolls.

"Volunteer." Length, 10 in.x1¾ in. dia. $40 doz.

"Volunteer." Length 11 in.x1¾ in. dia. $50 per doz.

"Volunteer." Length 12 in.x1¾ in. dia. $60 per doz. Dis., 40%.

"Volunteer." Two independent pressure screws,

"Daisy." Length, 10 in.x1¾ in. dia. $30 per doz.
"Daisy." Length, 12 in.x1¾ in. dia. $48 per doz. Dis., 40%.

"Empire." Length, 10 in.x1¾ in. dia. $63 per doz.
"Empire." Length, 11 in.x1¾ in dia. $74 per doz.
"Empire." Length, 12 in.x1⅞ in. dia. $84 per doz.
"Empire." Length, 12 in.x1⅞ in. dia. $87 per doz.
"Empire." Length, 14 in.x2¼ in. dia. $156 per doz.
"Empire." Length, 14 in.x2¼ with pulleys. $220 per doz.
"Empire." Length, 16 in.x2½ with pulleys. $360 per doz.
Dis., 40%.

EMPIRE CLOTHES DRYING BARS. $10 per doz. Dis., 40%.

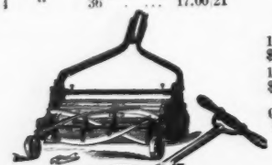
Closed.

Open for use

**Lawn Mowers.**

| In. | Lbs. | | In. | Lbs. | |
|---|---|---|---|---|---|
| 0 | Weight, 30¾ | $13.00 | 16 | Weight, 38 | $19.00 |
| 2 | " 31½ | 15.00 | 18 | " 41 | 21.00 |
| 4 | " 36 | 17.00 | 21 | | 34.00 |

Dis. 60 and 5%.

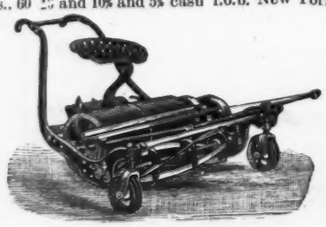


| 10 in. | 12 in. | 14 in. |
|---|---|---|
| $13.00 | $15.00 | $17.00 |
| 16 in. | 18 in. | 20 in. |
| $19.00 | $21.00 | $23.00 |

24 in., $30.00.
Geared at both ends.
Dis. 60 and 10 and 5 and 5%.

10 in. Croquet, 18 pound, mower..... $11.00
10 in..... 13.00
12 in..... 15.00
14 in..... 17.00
16 in..... 19.00
18 in..... 21.00
20 in..... 23.00

Dis., 60 10 and 10% and 5% cash f.o.b. New York.



New Excelsior Horse Lawn Mower.

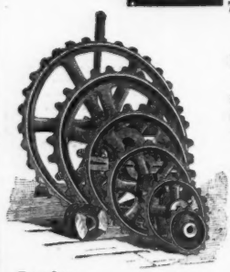
| | | |
|---|---|---|
| 25 in. cut | without shafts or seat | $65.00 |
| 30 " | with shaft and seat | 110.00 |
| 35 " | " " " | 135.00 |
| 40 " | " " " | 170.00 |
| Horse boots, per set | | 12.00 |

Dis. 50%.

Excelsior Three-Blade Mower and Roller.
8 in., $11.00; 1 in., $13.00; 12 in., 5.00; 14 in., $17.00; 16 in., $19.00; 18 in., $21.00; 20 in., $23.00
Dis. 60% and 5% cash 30 days f.o.b. New York.

**Link Belting.** Price per running foot, net.

| No. | Price. | No. | Price |
|---|---|---|---|
| 25 | $0.13 | 78 | $0.40 |
| 32 | .13 | 83 | .45 |
| 33 | .12 | 85 | .50 |
| 34 | .13 | 88 | .50 |
| 35 | .14 | 95 | .60 |
| 42 | .16 | 103 | .75 |
| 45 | .16 | 105 | .70 |
| 51 | .20 | 106 | .90 |
| 52 | .25 | 107 | .80 |
| 55 | .22 | 108 | .80 |
| 57 | .24 | 109 | .90 |
| 62 | .30 | 114 | 1.10 |
| 66 | .30 | 122 | 1.50 |
| 67 | .30 | 124 | 1.30 |
| 75 | .35 | 146 | 1.40 |
| 77 | 35 | | |



**Sprocket Wheels.**

Bored, Set-Screwed or Key-Seated.

In ordering always state which are the driving, and which the driven wheels.

Wheels made in halves (split) or with large hubs, and solid webs, can be furnished, for which an additional charge is made.

Discount, 40%.

**Locks.**

YALE PATENT.
RIM STORE LATCH.

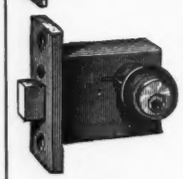
| | Per doz. |
|---|---|
| 3 × 5 in., 4 keys | $48.00 |
| 2½ × 4 in., 3 keys | 39.00 |

RIM NIGHT LATCH.

| | |
|---|---|
| Spring lock, 3 keys | 18.00 |
| Dead lock, 3 keys | 25.00 |

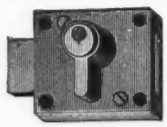
NIGHT LATCH.

| | |
|---|---|
| Escutcheon | 39.00 |
| " | 36.00 |



MORTISE DEAD LOCK.

| | |
|---|---|
| 4⅝ × 3½ | 45.00 |
| 2⅜ × 3½ | 24.00 |

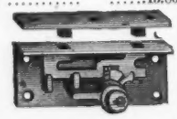


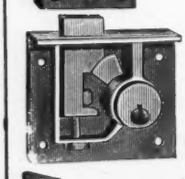
CUPBOARD LOCKS.

| | |
|---|---|
| Plated Nose | 13.20 |
| Brass Nose | 12.00 |

CUPBOARD

| | |
|---|---|
| Dead Lock | 10.80 |
| Spring Lock | 13.80 |





CHEST LOCKS.

| | |
|---|---|
| Plated nose | 19.20 |
| Brass " | 18.00 |

DRAWER LOCK.

| | |
|---|---|
| Plated nose | 10.20 |
| Brass " | 9.00 |

KNOB LOCKS.

| | |
|---|---|
| 5 × 3⅜ | 22.50 |
| 5 × 3⅜ | 20.00 |
| 4¼ × 3⅜ | 13.25 |
| 3½ × 3⅜ | 10.50 |

STANDARD LATCHES.
Dead locks.

| | |
|---|---|
| 3¾ × 2¾ | 24.00 |
| 2½ × 3⅜ | 14.00 |
| 1¾ × 2⅝ | 12.00 |

NIGHT LATCHES.

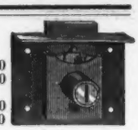
| | |
|---|---|
| 3¼ × 3⅜ | 20.00 |
| 2½ × 3¾ | 18.00 |

DRAWER LOCKS.
2 × 1⅝, two tumblers.

| | |
|---|---|
| Plated nose | 7.50 |
| Brass " | 6.00 |

Three tumblers.

| | |
|---|---|
| Plated nose | 9.00 |
| Brass " | 7.50 |



RIM FLUSH DRAWER LOCK.
2 in. diameter.

| | 2 tumblers. | 3 tumblers. |
|---|---|---|
| Plated nose | 7.50 | 9.00 |
| Brass " | 6.00 | 7.50 |

BRONZE SPRING PADLOCK.
2 flat steel keys.

| In. | |
|---|---|
| 1 | |
| 1 | 11.00 |
| 1¼ | 12.00 |
| 1½ | 13.50 |
| ¾ | 14.50 |
| 2 | 16.00 |
| 2¼ | 17.50 |

Subject to special net prices; no discount

YALE KEYS.

**Machinery—Foot Power.**

Engine Lathes

8 in. swing, 20 in. bet. centers, 36 in. bed, 240 lbs. weight, $60.
8 in. swing, 30 in. bet. centers, 46 in. bed, 260 lbs. weight, $70.
8 in. swing, 36 in. bet. centers, 52 in. bed, 280 lbs. weight, $75.

Boxing for export, $2.50 extra; f.o.b. at Cincinnati, 25 % dis.

SAWS AND LATHES

Victor Scroll Saw, Cuts to 3 Inches.

24-inch swing, with 12 saw blades ...
Dis., 20%.

Empire Scroll Saw, Cuts to 3 Inches.
24-in. swing, drill and tilting table.
Price, boxed..... ..... $25
Dis., 20%

The Acme Combination Saw.

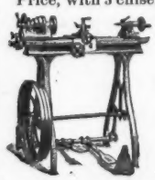
Hand or steam power.
Adjustable table and gauges.

| | |
|---|---|
| Price, boxed | $40 |
| Scroll saw attachment | |
| Boring attachment | 10 |
| Moulding attachment | 10 |

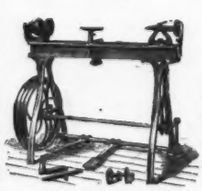
Dis., 20%.

Paragon Self Feed Rip Saw.
Two changes of speed; three changes of feed.
Price, with one 10 in. saw, $50.00
Dis., 20%.

Diamond Mortising Machine.
Will mortise ¼ to 1 in. wide, 3 in. deep.
" cut tenons ¼ to ¾ thick, 3 in. wide.
Price, with 3 chisels ..... $25.00
Dis., 20%



The "Star" Lathe.
Swings 9 × 25 in., back geared screw cutting.
Feeds in or out, right or left. Adjustable Tail Stock for Tapers.
Price, No. 1..... $75.00
Dis., 20%.



The Crown Lathe.
Swings 8 × 24 in.

| | |
|---|---|
| Price, boxed, No. 1 | $30.0 |
| Compound slide rest | 10.0 |
| Countershaft | 10.0 |

Dis., 20%.

Rival Scroll Saw, with six extra saw blades, twist drill and wrench.
Price..... ...$10.00
Lathe attachment.....$3.00
Dis., 25%.

Rival.

Challenge.

The Challenge Scroll Saw, for shell, bone wood, or metal.
Nickel Plated, with six extra saws twist drill and wrench.
Boxed.....$20.00
With lathe attachment.....$5.00
Dis., 25%.

Hand Circular Rip Saw.

Cuts 3¾ thick, 19 in. wide.

[Price $50.00.]

Dis.,

Scroll and Circular saw Combined Combined Machines.
Combined circular scroll saw and boring attachment—2 circular saws, 12 assorted scroll saws, boring attachment, and self-centering drill chuck.....$50.00
Combined circular and scroll saw—2 circular and 12 scroll saws..... 40.00
Circular saw—1 extra rip and 1 cross-cut saw..... 35.00
Countershaft for steam power..... 10.00
Dis., 35%.

Foot Power Former.
$20.00; Knives extra, $1.00 each.
Dis., 35%.

Mortising Machine.
$22.00; Chisels, $1.00 each.
Dis., 35%.

Blind Slat Chisels, 3 set bits, $5.00.
Dis., 20%.

Tenoning Machine.
Price, $25.
Dis., 35%.

Velocipede Scroll Saw,

Without boring attachment..... ... .....$20.00
With " " ..... 23.00
1 doz. saw blades, 1 3-16 bit. } Included. Dis., 35%.

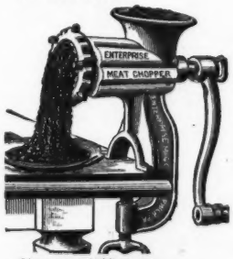
Lathe.

centres, 1 spur, 2 tool rests and sockets, 1 turned face-plate, $35.
Dis., 30%.

Lathe.

One turned face-plate, two pointed and one spur center, two rests, with sockets and plate for hand tools, slide rest wrench, belting, etc., $40.
Dis., 25%.

**Meat Cutters.**




5, each.....$2.00
10, " ... ..... .... 3.00
22, " ..... 4.00
41, " ..... ... .. .50.00
This is a power machine.

Dis., 50%.

**Motors (Water).**

Size No. 8, for Sewing Machines, etc , $18 each.

No. 9, ⅛ horse-power (30 lbs. pressure), ¼ h. p. (50 lbs.), ½ h. p. 100 lbs.), ¾ h. p. (150 lbs.), 1 h. p. (200 lbs.), $30.

No. 10, ¼ horse-power (30 lbs. pressure), ½ h. p. (50 lbs.), 1 h. p. (100 lbs.), 1½ h. p. (150 lbs.), 2 h. p. (200 lbs.), $50.

No. 10½, ⅛ horse-power (30 lbs. pressure), 1 h. p. (50 lbs), 2 h. p. (100 lbs.), 3 h. p. (150 lbs.), 4 h. p. (200 lbs.), $75.

No. 11, 1 horse-power (30 lbs. pressure), 1½ h. p. (50 lbs.), 3 h. p. (100 lbs.), 4½ h. p. (150 lbs.), 6 h. p. (200 lbs.), $100.

No. 12, 2 horse-power (30 lbs. pressure), 3 h. p. (50 lbs.), 6 h. p. (100 lbs.), 9 h. p. (150 lbs.), 12 h. p. (200 lbs.), $175.

No. 13, 3 horse-power (30 lbs. pressure), 5 h. p. (50 lbs.), 10 h. p. (100 lbs.), 15 h. p. (150 lbs.), 20 h. p. (200 lbs.), $285.
Dis., 30%.

Governors for 11 and 12, $25 extra; for No. 13, $35 extra.

| | | | | | |
|---|---|---|---|---|---|
| Price..... ..... | $120 | $160 | $200 | $250 | $300 |
| MINING WHEELS ..... | 16 | 18 | 20 | 22 | 24 |

Power according to pressure:
3 to 50, 10 to 100, 15 to 150, 20 to 200, 30 to 300 H. P.

Concentrating Machinery.

Blake Improved Crusher: 10x7, weight 7,500; $410.00.

Blake Improved Crusher: 15x9, weight 9,000; $580.00.
Discount 25%.

Cornish Crushing Rollers: 20 diameter, 10 face, weight 5,400; $450.00.

Cornish Crushing Rollers: 20 diameter, 14 face, weight 6,000; $500.00.

Cornish Crushing Rollers: 22 diameter, 14 face, weight 7,500; $625.00.

Cornish Crushing Rollers: 27 diameter, 14 face, weight 13,000; $750.00.

Cornish Crushing Rollers: 30 diameter, 14 face, weight 15,000; $850.00.

Discount 25%.

Complete Sizing Arrangement, consisting of Revolving Screens of Steel Sheet and Hydraulic Classifier.

For Concentrator, 25 tons capacity, $250; 50 tons capacity, $350; 75 tons capacity, $450; 100 tons capacity, $800. Discount, 10 per cent.

Automatic working Jig Machines, all complete, wood work included, with slide motion: 2 sieves, $310; 3 sieves, $360; 4 sieves, $450.

With Eccentric Motion, all complete, woodwork included: 1 sieve, $200; 2 sieves, $270; 3 sieves, $320; 4 sieves, $330.

Automatic working Double Jig Machines, all complete, woodwork included: 4 sieves, $210; 6 sieves, $335; 8 sieves, $425. Discount, 25 per cent.

Single Rittinger Percussion Tables, all the iron parts, $350; Double Rittinger Percussion Tables, all the iron parts, $500. Discount, 10 per cent.

Improved Rotary Tables, all the iron parts and pipes, $200. Discount, 25 per cent.

**Nails and Tacks.**

Swedes.

| Tacks. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Per doz. | ½ | ¾ | 1 | 1½ | 2 | 2½ | 3 | |
| ½ wt.. | 35 | 40 | 46 | 50 | 55 | 60 | 65 | 75 |
| 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 oz. |
| 85 | 1.00 | 1.20 | 1.40 | 1.60 | 1.75 | 1.85 | 2.15 | 2.55 |
| Doz.full | ½ | ¾ | 1 | 1½ | 2 | 2½ | 3 | 4 |
| weight | 60 | 70 | 80 | 90 | 1.00 | 1.10 | 1.20 | 1.40 |
| 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 oz. |
| 1.60 | 1.90 | 2.30 | 2.70 | 3.10 | 3.40 | 3.80 | 4.20 | 5.00 |
| lb., bulk | ½ | ¾ | 1 | 1½ | 2 | 2½ | 3 | 4 |
| or paper | 1.60 | 1.25 | 1.00 | 80 | 66 | 58 | 52 | 46 |
| 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 |
| 36 | 32 | 31 | 30 | 29 | 28 | 28 | 28 | 28 |

Discount, 67½, 10 and 2%.

O. H. Swedes.
Price, same as Swedes.
Swedes steel tacks same list price as iron.

Upholsterers.
Price, same as Swedes.

Discounts, 72½, 10 and 2%.

Cut Tacks. Price per dozen ounces.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 1½ | 2 | 2½ | 3 | 4 | 6 | 8 | 10 |
| ¼ wt..... | .. | .. | .. | .. | 35 | 40 | 45 | 50 | 55 |
| | 12 | 14 | 16 | 18 | 20 | | | | |
| | 60 | 70 | 80 | 90 | 1.00 | | | | |
| ½ wt. .... | 1 | 1½ | 2 | 2½ | 3 | 4 | 6 | 8 | 10 |
| | 45 | 50 | 50 | 55 | 60 | 65 | 70 | 80 | 95 |
| | 12 | 14 | 16 | 18 | 20 | | | | |
| | 1.10 | 1.25 | 1.40 | 1.55 | 1.70 | | | | |
| Full wt... | 1 | 1½ | 2 | 2½ | 3 | 4 | 6 | 8 | |
| | 80 | 90 | 90 | 1.00 | 1.10 | 1.20 | 1.30 | 1.50 | |
| | 10 | 12 | 14 | 16 | 18 | 20 | | | |
| | 1.80 | 2.10 | 2.40 | 2.70 | 3.00 | 3.30 | | | |

Discount, 70, 10 and 2%.

Carpet Tacks, flat and oval heads.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Blued, doz. | oz. | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
| ¼ wt. .... | | 35 | 40 | 45 | 50 | 55 | 65 | 75 | 85 | 95 |
| | | 22 | 24 | | | | | | | |
| | | 1.05 | 1.15 | | | | | | | |
| " ½ wt. | | 4 | 6 | 8 | 10 | 12 | 14 | 16 | | |
| | | 65 | 70 | 80 | 95 | 1.10 | 1.25 | 1.40 | | |
| | | 18 | 20 | 22 | 24 | | | | | |
| | | 1.55 | 1.70 | 1.85 | 2.00 | | | | | |
| Tinned, doz. ¼ wt. | | 4 | 6 | 8 | 10 | 12 | 14 | 16 | | |
| | | 50 | 55 | 60 | 75 | 85 | 1.00 | 1.10 | | |
| | | 18 | 20 | 22 | 24 | | | | | |
| | | 1.20 | 1.35 | 1.45 | 1.60 | | | | | |
| Tinned, doz. ½ wt. | | 4 | 6 | 8 | 10 | 12 | 14 | | | |
| | | 95 | 1.05 | 1.15 | 1.40 | 1.60 | 1.85 | | | |
| | | 16 | 18 | 20 | 22 | 24 | | | | |
| | | 2.10 | 2.35 | 2.60 | 2.85 | 3.10 | | | | |

Discount, 72½, 10 and 2%.

Finishing Nails.

| Inch.... | ⅝ | 3½-8 | 4-8 | 4½-8 | ⅝ | 5½-8 | 6-8 | 7-8 | 1 |
|---|---|---|---|---|---|---|---|---|---|
| Per lb... | 48 | 40 | 32 | 28 | 26 | 24 | 22 | 20 | 18 |

1½ and larger.
16
Discount, 60, 10 and 2%.

Chair Nails.
Doz. ½ wt. ; doz. full wt.; pound B. or P.

| Inch.. | ⅝ | 3½-8 | 4-8 | 4½-8 | ⅝ | 5½-8 | 6-8 | 7-8 |
|---|---|---|---|---|---|---|---|---|
| Per lb. | 51 | 43 | 35 | 31 | 29 | 27 | 25 | 23 |
| | 1 | 1½ | | | | | | |
| | 21 | 19 | | | | | | |

Discount, 60, 10 and 2%.

Common and patent brads.

| inch. | Price per doz. ½ wt. | Price per doz. full wt. | Price per lb. in papers or bulk. |
|---|---|---|---|
| 2-8..... | .50 | 1.00 | 1.25 |
| 3-8..... | .60 | 1.20 | .80 |
| 4-8..... | .65 | 1.30 | .58 |
| 5-8..... | .72 | 1.44 | .48 |
| 6-8..... | .80 | 1.60 | .36 |
| 7-8..... | .90 | 1.80 | .30 |
| 1..... | 1.00 | 2.00 | .26 |
| 1⅛..... | 1.12 | 2.24 | .25 |
| 1¼..... | 1.26 | 2.52 | .24 |
| 1⅜..... | 1.82 | 3.64 | .22 |
| 1¾..... | 2.25 | 4.50 | .20 |
| 2..... | 2.43 | 4.86 | .18 |

Dis. 60, 10 and 2%.

**Oils.** LUBRICATING.

Lubroleine A cylinder oil 50 in. barrels.
Lubroleine D cylinder oil 40 in. barrels.
Lubroleine A machine oil 45 in. barrels.
Lubroleine B machine oil 35 in. barrels.
Lubroleine A engine oil 50 in. barrels.
Lubroleine B engine oil 40 in. barrels.
In cases 5c gal. extra.
Crescent Axle Grease.—Barrels, 3c per lb; 100-lb. kegs, 3½c lb.; 2-lb. decorated tins, $12, gross less 5 per cent.
Texas Star Axle Grease.—Barrels, 2½c per lb.; 100 lb. kegs, 3c per lb.
See Axle Grease, page 2.

**Packing.**

Eureka, 75c. per lb. Dis., 40%.
Soapstone—Standard, 8c. per lb.
XX. 11c. per lb.
Crown—No. 1, 23c. per lb.
No. 2, 26c. per lb.
Climax, 9c. per lb. Net.
SELDEN'S PATENT.
For Steam, Air, Water and Ammonia.
With Rubber Core, 60 cents per lb.
Dis., 25 and 5%.
With canvas core, 50 cents per lb.
Dis., 30 and 5%.

**Paper, Waxed.**

| White. | Per ream. |
|---|---|
| XX, 24 × 36..... | $2.20 |
| "Sparks' A No. 1 Brand," 21 × 36... | 2.10 |
| "Progress No. 2," 24 × 36..... | 1.80 |
| "Climax," 24 × 36 ..... | 1.60 |
| " 24 × 36 ..... | 1.35 |
| FF, or B. F., 24 × 36..... | 1.00 |
| Colored. | |
| A, 24 × 36..... | 2.40 |
| B, 24 × 36 ..... | 2.00 |
| Manilla. | |
| A, 24 × 36..... | 1.88 |
| "Climax," 24 × 36..... | 1.40 |

Discount, 5%.

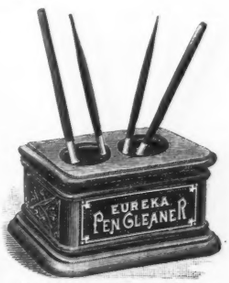
| Manilla. | | | White. | | |
|---|---|---|---|---|---|
| | Flat bags. | Sq. bags. | | Flat bags. | Sq. bags. |
| No. | Per M. | Per M. | No. | Per M. | Per M. |
| ¼ | $1.25 | $1.40 | ¼ | $1.70 | $1.90 |
| ½ | 1.50 | 1.75 | ½ | 2.05 | 2.25 |
| 1 | 1.85 | 1.85 | 1 | 2.60 | 2.85 |
| 1½ | 2.00 | 2.30 | 1½ | 2.80 | 3.15 |
| 2 | 2.25 | 2.60 | 2 | 3.12 | 3.45 |
| 3 | 2.70 | 3.10 | 3 | 3.70 | 4.10 |

| Mikado. | | Mikado. | |
|---|---|---|---|
| No. | Per M. | No. | Per M. |
| ¼..... | $1.40 | 1½..... | $2.30 |
| ½..... | 1.75 | 2 ..... | 2.60 |
| 1 ..... | 1.85 | 3 ..... | 3.10 |

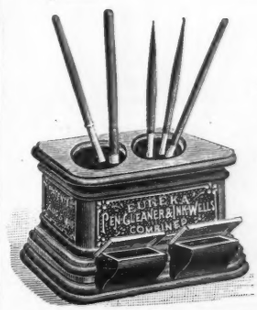
Discount, 10%

**The Eureka Pen Cleaners.**

Single pen cleaner, $3 doz.




Double pen cleaner, $6 doz.




Pen cleaner with single ink well... } $12 doz.

With double ink wells.. } $18 doz

40% disc't.

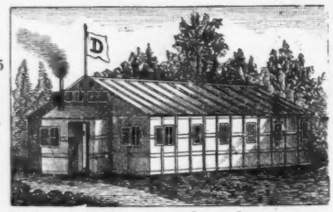
**Portable Houses.**

Weight, 450 lbs.

Price, $150.

Closes securely.

Dis., 10%.



Weight, 85 lbs. per section.

Price, $220.

Dis., 10%.

No. 10.—26 × 33 ft.. including veranda and rear extension. Main part, 19 × 26 ft.....$500.0
Dis., 10%.

F. o. b. Cars Chicago or New York

| Size. | Doors. | Windows. | No. porch. | End porch | Side porch. |
|---|---|---|---|---|---|
| 7 × 9 | 1 | 2 | $64.00 | $71.00 | $73.00 |
| 7 × 12 | 1 | 2 | 75.00 | 82.00 | 87.60 |
| 7 × 16 | 1 | 2 | 90.00 | 97.00 | 106.00 |
| 7 × 19 | 2 | 4 | 117 00 | 124.00 | 136.00 |
| 10 × 9 | 1 | 2 | 70.00 | 80.00 | 79.00 |
| 10 × 12 | 1 | 2 | 92.00 | 102.00 | 104.00 |
| 10 × 16 | 1 | 4 | 108.00 | 118.00 | 124.00 |
| 10 × 19 | 2 | 4 | 134.00 | 144.00 | 153.00 |
| 10 × 26 | 2 | 4 | 172.00 | 182.00 | 198.00 |
| 10 × 32 | 2 | 6 | 203.00 | 213.00 | 235.00 |
| 12 × 12 | 1 | 2 | 102.00 | 114.00 | 114.00 |
| 12 × 14 | 2 | 4 | 138.00 | 150.00 | 154.00 |
| 12 × 19 | 2 | 4 | 160.00 | 172.00 | 179.00 |
| 12 × 26 | 2 | 4 | 193.00 | 205.00 | 219.00 |
| 12 × 32 | 2 | 6 | 245.00 | 257.00 | 277.00 |

**Post Hole Diggers.**

Little Giant..... $36.00 doz 11 cu.ft.

Hercules..... 30.00 " " "

New Champion.... 20.00 " " "

Scheidler..... 36.00 " " "

Dis. 40 .o.b.New York or Boston.

**Presses.**

41, 42, 43, 44, 45.

Combined press for cutting, forming, horning and seaming.

Particulars of flat front presses, including beds, slides, bolsters, plates, etc.

Prices are net, delivered on steamers in New York, including insurance, etc.

| Nominal size of press | 41 | 42 | 43 | 44 | 45 |
|---|---|---|---|---|---|
| Price, including et ceteras | $140 | $220 | $300 | $420 | $700 |
| Weight, about lbs | 600 | 1050 | 1900 | 3500 | 7200 |
| Greatest diameter that can be wired ins | 5 | 7 | 10 | 14 | 20 |
| Greatest depth that can be wired ins | 8 | 10 | 13 | 16½ | 20 |
| Hole through bed—circle intersecting ins | 4½ | 6 | 8½ | 12 | 17 |
| Hole through back—width ins | 8 | 9½ | 12 | 15½ | 20½ |
| Width between die clamps—clear ins | 8 | 11 | 15 | 20 | 27 |
| Distance back from center of slide bar ins | 4½ | 5½ | 7 | 9 | 12 |
| Height to slide-bar, when up ins | 5¼ | 6½ | 7½ | 8½ | 9 |
| Stroke of slide-bar ins | 1 | 1¼ | 1½ | 1¾ | 2 |
| Adjustment of slide-bar ins | 1 | 1¼ | 1½ | 1¾ | |
| Diameter of fly-wheel ins | 20 | 26 | 32 | 38 | 44 |
| Width of fly-wheel ins | 3 | 4 | 5 | 6 | 7 |
| Weight of fly-wheel, about lbs | 125 | 250 | 420 | 725 | 1100 |
| Speed per minute, about rev | 120 | 110 | 100 | 90 | 80 |
| Cubic feet boxed, about | 30 | 40 | 50 | 60 | 70 |

**Printers' Sundries.**

Wood rules, 12 cents per yard.

Wood rules, on end wood, 15 cents per foot.

EUREKA STAND.
12 full cases.

rice without cases.....$12.00
oxing and cartage..... 1.25

SHOOTING STICKS.

Each.
No. 1, 75c.
No. 2, $1.
No. 4, 45c., black.
No. 4, 60c., bright.
No. 5, 60c., black.
Nc. 5, 75c., bright.

GAUGE PINS—ALL SIZES.

Brass, 40c. doz. | Steel, 60c. doz.
Wire, 25c. doz. | Golden, 40c. doz.

MITRE BOXES.

Regular size, 2 in., 50c. each.
Extra size, 3½ in., 75c. each.

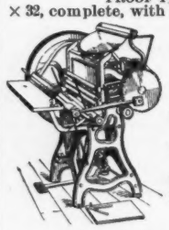
LEAD CUTTER.

Curtis' Lead Cutter .....$2.0

PROOF PRESS, "OUR OWN."

× 32, complete, with Brayer.....$28.00

THE GLOBE PRESS.



8 x 12 in. inside clear, with throw-off .....$150.00
9 x 13 in. inside clear, with throw-off..... 175.00
10 x 15 in. inside clear, with throw-off ..... 200.00
11 x 17 in. inside clear, with throw-off..... 250.00
Steam fixtures..... 15.00
Fountain..... 12.50
Dis. 20%.

THE "LIBERTY" JOB PRINTING PRESS.

Size of chase.
No. 2 — 7 × 11.....$200
2a— 9 × 13.....250
3 —10 × 15.....300
3a—11 × 17.....350
4 —13 × 19.....400
5 —14½ × 22.....500
Dis., 12½ and 5%.

Two sizes built extra strong for boxmakers, embossing, etc.
No. 3a—11 × 17.....$375
4 —13 × 19..... 425
Dis., 12 and 5%.

Fountains, either size, $25 extra, if ordered with press.
Steam fixtures, either size, $15 extra.

THE AMERICAN CARD AND BILL HEAD PRESS.

No. 5—4 × 6..... $10
7—6 × 9..... 30
8—8 × 12..... 60
Dis., 20% and 5%.

THE "LIBERTY" PAPER CUTTER.

Cuts 30 inches.....$140.00
Extra knife..... 18.80
Dis., 12½ and 5%.

CASE STANDS AND RACKS.

Stands.
Single, without racks ..$3.75
" with racks for 8 full cases..... 4.00
Single, with racks for 10 full cases..... 4.2
Single, with racks for 12 full cases..... 4.50
Single, with racks for 14 full cases..... 4.75
Double, without racks... 4.25
" with racks for 8 full cases..... 4.50
Double, with racks for 16 full cases, and gal. rest 6.25
Double, with racks for 20 full cases and gal. rest.... 6.50
" " " " 24 " " " " .... 6.75
" " " " 24 ⅔ cases..... 5.25
" " " " 8 full and 8 ⅔ cases ..... 5.00
" " " " 8 " " 8 ⅔ " ..... 5.25
" " " " 10 " " 12 ⅔ " ..... 5.55
" " " " 12 " " 16 ⅔ " ..... 5.70
" " " " 12 " " 16 ¾ " ..... 6.05
Stands with closed ends, extra..... 2.00
Extra slides for stands, each..... .05

GALLEY RACKS.
From $3 up.

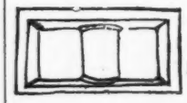
LEAD CUTTERS,
From $2 up.
Dis., 20 and 5%.

THE "LIBERTY" TYPE CASES.

| Name. | Outside Measurements. |
|---|---|
| Full size | 32¼x16½x1 9-16 |
| Rooker size | 28½x14¼x1 9-16 |
| ¾ size | 26x16½x1⅝ |
| ⅔ size | 22⅝x16½x1⅝ |
| Enlarged size | 32¼x23x2 3-16 |
| Wood type " | 32¼x23x1 9-16 |
| Mammoth " | 44x23x1 9-16 |

Cabinet case sides extend 1½ to 3 inches. In ordering cabinet cases, state whether high or low fonts are wanted. 30 and 5%.

THE "LIBERTY" STEEL SHOOTING STICKS.
Bright, $1 each.
Nickelplated, $1.25 each.
Dis., 40%.

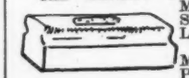


STANDARD METAL FURNITURE
25c. a pound.
In fonts of 25, 50, 75 and 100 lbs.
Dis., 15%.

THE "LIBERTY" MALLETS.

Hickory, small.....$ .20
" medium..... .25
" large..... .30
" iron bound..... 1.00
Lignum Vitæ, No. 4..... .30
" " No. 3..... .40
" " No. 2..... .50
" " No. 1..... .70
Dis. 20 and 5%.

THE "LIBERTY" PLANERS AND PROOF PLANERS.



Midget planer..... 10c.
Small Maple..... 20c.
Large " ..... 25c.
" b'k'd with leather..... 30c.
Midget " " " ..... 12c.
Proof planer, faced with cloth, 50c.
Dis., 40%.

COMPOSING STICKS.

GROVER'S PATENT AND UNION.

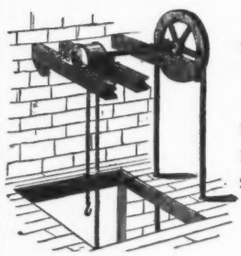
| | | Screw or News. |
|---|---|---|
| 6 in. | 1.10 | $ .90 |
| 8 " | 1.20 | 1.10 |
| 10 " | 1.40 | 1.20 |
| 12 " | 1.60 | 1.40 |
| 14 " | 1.80 | 1.60 |
| 16 " | 2.00 | 1.80 |
| 18 " | 2.20 | 2.00 |
| 20 " | 2.40 | 2.20 |

Compo ing rules, 14 ems pica and under, 25 cents.

**Pulley Blocks.**

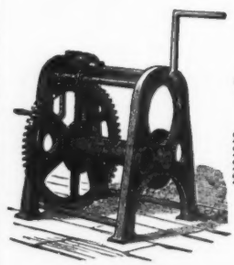
WESTON DIRECT.

| | Each. |
|---|---|
| ⅛ ton | $10 |
| ¼ ton | 13 |
| ½ ton | 15 |
| 1 ton | 20 |
| 1½ tons | 25 |
| 2 tons | 30 |
| 3 tons | 40 |
| Geared. | |
| 1 ton | 34 |
| 2 tons | 55 |
| 3 tons | 60 |
| 4 tons | 80 |
| 5 tons | 110 |
| 6 tons | 150 |
| 8 tons | 210 |
| 10 tons | 250 |



DOUBLE LIFT HOISTS FOR HATCHWAYS, ETC.

| | |
|---|---|
| 500 lbs | $25.00 |
| 1000 " | 50.00 |
| 1500 " | 65.00 |
| 2000 " | 80.00 |
| 500 " | 30.00 |



WESTON CRAB SAFETY BRAKE, HANDLES CANNOT FLY BACK.

| | Each. |
|---|---|
| 21 | $35.00 |
| 22 | 45.00 |
| 23 | 65.00 |
| 25 | 100.00 |

**Pumps.**

Fig. 464. Fig. 267.

Fig. 464.—Rotary Barrel Pump.

| No. | 1 | 2 | 3 | No. | 1 | 2 | 3 | |
|---|---|---|---|---|---|---|---|---|
| Iron. | $17.00 | $20.00 | $24.00 | Bronze. | $39.00 | $44.00 | $49 00 | 50% |
| | 70/10 | 83/4 | 100 0 | | 162/6 | 183/4 | 204/2 | |

Fig. 297.—Hand Rotary.

| | No. 1. | 2 | 3 | |
|---|---|---|---|---|
| Iron | $19.00 | $22.00 | $26.00 | 50% |
| | 79 2 | 91/8 | 108/4 | |
| Bronze | $41 00 | $46.00 | $51.00 | |
| | 170/10 | 191/8 | 212/6 | |

Fig. 747. Fig 514. Fig. 413.

Fig. 514.—Syphon Force.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Diam. and stroke, | 2½x8½ | 3x8½ | 3½x8½ | 4x8½ | 4x10 | 4½x10 | 5x10 |
| | $25.00 | $25.25 | $27.25 | $30.50 | $40.00 | $45.00 | $50.00 |
| | 104/2 | 105/2½ | 113/6½ | 127/1 | 166/8 | 187/6 | 208/4 |
| Diam. and stroke | 5½x10 | 6x10 | 4½x12 | 5x12 | 5½12 | 6x12 | |
| | $56.00 | $64.00 | $54.00 | $60.00 | $66.00 | $78.00 | |
| | 233/4 | 266/8 | 225/0 | 250/0 | 275/0 | 325/0 | |

50%

Fig. 413.—Windmill Pump Standard.

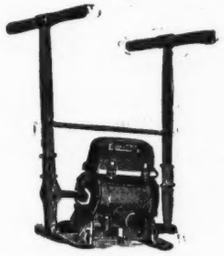
| 6 in. stroke. | 10 in. stroke. | |
|---|---|---|
| $15.50—64/7 | $17.00—70/10 | 55%. |

For Cylinders, see Catalogue.

Fig. 747.—Horizontal Double-Acting.

| | No. 2 | 4 | 6 | 8 |
|---|---|---|---|---|
| Iron | $16.00 | $18.00 | $24.00 | $31.00 |
| | 66/8 | 75/0 | 100/0 | 129/2 |
| Brass | $60.00 | $65.00 | $80.00 | $90.0 |
| 50%. | 250/0 | 270/10 | 333/4 | 375/0 |

Fig. 562.



Hydraulic Rams.

Fig. 345.

| No. 2 | 3 | 4 | |
|---|---|---|---|
| $9.00 | $11.00 | $14.00 | |
| 37/6 | 45/10 | 58/4 | |
| No. 5 | 6 | | 50% |
| $22.00 | $40.00 | | |
| 91/8 | 166/8 | | |
| No. 7 | 8 | | |
| $75.00 | $125.00 | | |
| 312/6 | 520/10 | | |

Fig. 562.

| | No. 12 | 16 | |
|---|---|---|---|
| Iron, brass lined | $45.00 | $50.00 | |
| | 187/6 | 208/4 | |
| | No. 12 | 16 | |
| Brass | $125.00 | $175.00 | 45% |
| | 562/6 | 729/2 | |

## Pulsometer Pump.

| No. | Height. | Space occupied. In. | Size of steam pipe | Size of suction pipe. | Size of discharge pipe. |
|---|---|---|---|---|---|
| 1 | 14 in. | 9 × 7 | ⅛ in. | 1 in. | 1 in. |
| 2 | 20 " | 15 × 12 | ¼ " | 1½ " | 1½ " |
| 3 | 23 " | 1 × 14 | ⅜ " | 2 " | 2 " |
| 4 | 30 " | 21 × 16 | ½ " | 2½ " | 2½ " |
| 5 | 34 " | 24 × 20 | ⅝ " | 3 " | 3 " |
| 6 | 40 " | 28 × 22 | ¾ " | 3½ " | 3½ " |
| 7 | 43 " | 30 × 24 | ¾ " | 4 " | 4 " |
| 8 | 54 " | 33 × 29 | 1 " | 5 " | 5 " |
| 9 | 61 " | 37 × 31 | 1½ " | 7 " | 6 " |
| 10 | 80 " | 52 × 45 | 2 " | 8 " | 8 " |

| Gal's. per minute. | Weight. | Net price. | Size boiler. |
|---|---|---|---|
| 10 | 35 | $50 | |
| 20 | 125 | 75 | 3 |
| 60 | 210 | 100 | 5 |
| 100 | 355 | 150 | 6 |
| 175 | 475 | 175 | 8 |
| 300 | 695 | 225 | 12 |
| 425 | 850 | 275 | 15 |
| 700 | 1,600 | 400 | 20 |
| 1,000 | 2,000 | 500 | 30 |
| 2,000 | 5,000 | 1,000 | 40 |

## Rat Traps.

1 doz. in box.

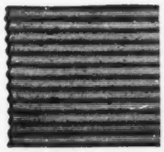
1 gross in case.

$30 per gross.

Dis. 50 and 10%.

## Roofing.

CORRUGATED IRON.
2½ inch corrugations.



| Gauge. | Per square. |
|---|---|
| No. 18, painted red | $9.10 |
| No. 20, " " | 7.60 |
| No. 22, " " | 6.50 |
| No. 24, " " | 5.35 |
| No. 26, " " | 4.65 |
| No. 27, " " | 4.35 |
| No. 28, " " | 4.00 |
| No. 18, galvanized | 13.30 |
| No. 20, " | 10.60 |
| No. 22, " | 9.10 |
| No. 24, " | 7.45 |
| No. 26, galvanized | 7.05 |
| No. 27 " | 6.95 |
| No. 28 " | 6.75 |

Dis., 10%. F. o. b. N. Y.

## Railroad Dumping Cars and Carts.

| Cars. | Gauge. | Cap. | Net | Cap. | Net | Cap. | Net. |
|---|---|---|---|---|---|---|---|
| Side Dumping | 24" | 1 c. y. | $55 | 2 c. y. | $65 | 3 c. y. | $75* |
| End " | " | " | 55 | " | 65 | " | 75* |
| Revolving " | " | " | 70 | " | 80 | " | 90* |
| Bottom " | " | " | 80 | " | 90 | " | 100* |
| Tunnel. | " | " | 55 | " | 65 | " | 75* |
| Mine | " | " | 50 | " | 60 | " | 70* |
| Plantation | 30" | | 43 | | | | |
| Logging. | 36" | | 170 | | | | |
| | 4' 8½" | | 185 | | | | |
| Hand | 36" | | 45 | | | | |
| " | 4' 8½" | | 50 | | | | |
| Push | 36" | | 40 | | | | |
| " | 4' 8½" | | 45 | | | | |
| R.R. Construction | 36" | | 60 | | | | |
| " | 4' 8½" | | 65 | | | | |
| Carts. | | | | | | | |
| Plantation and Railroad | | | 45 to 75 | | | | |
| Wagons. | | | | | | | |
| McEwen Patent Dumping | | 1 " | 175 | 1½ " | 200 | | |

*These cars built of any gauge from 18" to 56½" and of any capacity from ⅛ to 6 cu. yd.

## Sash Chains.

No. A. "Giant" metal, 15c. p ft., wts. not over 125 lbs.
No. 1. "Giant" metal, 12c. pr. ft., wts. not over 75 lbs.
No. 2. "Giant" metal, 10c. pr. ft., wts. not over 40 lbs.
No. 0. "Giant" metal, 8c. pr. ft., wts. not over 25 lbs.
No. 1. Red metal, 10c. pr. ft., wts. not over 40 lbs.
No. 2. Red metal, 8c. pr. ft., wts. not over 30 lbs.
No. 0. Red metal, 6c. pr. ft. wts. not over 15 lbs.
No. 1. Steel, 8c. pr. ft., wts. not 75 lbs.
No. 2. Steel, 6c. pr. ft., wts. not over 30 lbs.
No. 0. Steel, 4c. pr. ft., wts. not over 15 lbs.
No. 1. Steel, black enameled, 9c. pr. ft., wts. not over 75 lbs.
No. 2. Steel, black enameled, 7c. pr. ft., wts. not over 30 lbs.
No. 0. Steel, black ena'd, 5c. pr. ft., wts. not over 15 lbs.

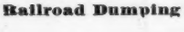
Fastenings for hanging a window of 2 sashes for Nos. 1 and 2 chains, consisting of 4 hooks, 4 rings, 4 sash irons, a set, 18c. per set.

Fastenings for hanging a window of 2 sashes for No. 0 chains, 14c. per set.

| | | | |
|---|---|---|---|
| Dis. on "Giant" metal chain | 40 | 10 | 10% |
| " " Red metal chain | 40 | 10 | 10 10% |
| " " Steel " " | 40 | 10 | 10 10% |
| " " Fastenings | 40 | 10 | 10% |

## Saws.

PATENT GROUND AND TEMPERED SOLID TOOTH CIRCULAR SAWS.

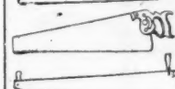


| Diameter. Inch. | Thickness. Gauge. | Size of hole—Inch. | Price each. | Extra for each additional gauge, heavier. | Prices for beveling new saws (grinding or beveling old saws, extra). Per gauge. |
|---|---|---|---|---|---|
| 1 | 24 | ⅜ | $0.50 | $0.01 | $0.06 |
| 2 | 23 | ⅜ | .60 | .01½ | .08 |
| 3 | 21 | ½ | .70 | .02½ | .10 |
| 4 | 19 | ¾ | .90 | .03 | .14 |
| 6 | 18 | ¾ | 1.30 | .05 | .18 |
| 8 | 18 | ⅞ | 1.75 | .08 | .22 |
| 10 | 16 | 1 | 2.30 | .12 | .28 |
| 12 | 15 | 1 | 3.00 | .17 | .35 |
| 16 | 14 | 1⅛ | 5.50 | .25 | .50 |
| 20 | 13 | 1 5-16 | 8.50 | .35 | .70 |
| 24 | 11 | 1⅜ | 12.00 | .55 | .90 |
| 28 | 10 | 1½ | 16.00 | .80 | 1.20 |
| 32 | 10 | 1⅝ | 20.00 | 1.00 | 1.40 |
| 36 | 9 | 1⅝ | 25.50 | 1.40 | 1.70 |
| 40 | 9 | 2 | 35.00 | 2.00 | 2.00 |
| 44 | 8 | 2 | 52.50 | 3.00 | 2.40 |
| 48 | 8 | 2 | 70.00 | 4.00 | 2.80 |
| 52 | 7 | 2 | 90.00 | 5.00 | 3.25 |
| 56 | 7 | 2 | 115.00 | 7.00 | 3.75 |
| 60 | 6 | 2 | 145.00 | 9.00 | 4.25 |
| 64 | 6 | 2 | 180.00 | 12.00 | 5.00 |
| 68 | 5 | 2 | 225.00 | 18.00 | 5.75 |
| 72 | 5 | 2 | 290.00 | 24.00 | 6.55 |
| 76 | 5 | 2 | 375.00 | 30.00 | 7.50 |

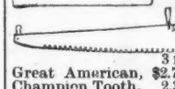
Circular saws to cut metal or ivory, 50% advance. No extra charge for saws one gauge thicker than list. Circular saws beveled one gauge without extra charge up to 44 inches; 44 inches and larger, beveled two gauges without extra charge. Dis., 45%.

Hand—London Spring Steel four brass screws.
26 in. $30.00 per doz. Dis., 20%.

Hand—Skew Back Saw, Apple Handle; 5 screw.
26 in. $22.00 per doz.



Hand—Grained Blade, Beec handle, polished edge; 4 screws.
26 in. $20.00 per doz.
Dis,, 20%.



One man Cross-Cut—Supplementary Handle.

| | 3 ft. | 3½ft. | 4 ft. | 4½ ft. | 5 ft. | 5½ ft. | 6 ft. |
|---|---|---|---|---|---|---|---|
| Great American, | $2.75 | $3.00 | $3.50 | $4.00 | $4.50 | $5.00 | $5.50 |
| Champion Tooth, | 2.35 | 2.60 | 3.15 | 3.50 | 3.85 | 4.25 | 4.65 |

One man cross cut handles, $4.50 per doz. Dis., 45%.

**Saw Set.**

Adjustable ball and socket saw clamp,

Japanned, $14 per doz.

**Scales.**—Discount on scales, 50, 10 and 5 per cent.

Postal scales.
No. 1, capacity ½ to 9 oz. $3.00.
No. 2, capacity ½ to 12 oz. $4.00.
No. 3, capacity ½ to 34 oz. $6.00
No. 4, capacity ½ oz. to lbs., $8.00

Butter Trip Scales, slab, weights and scoop.

| | | | | | |
|---|---|---|---|---|---|
| No. 7, ½ oz. to 10 lbs., | 10 in. | slab, | without | side beam | $10.50 |
| " " " " " | " | " | with | " | 11.50 |
| " 8 " " 20 lbs., | 12 in. | " | without | " | 12.50 |
| " " " " " | " | " | with | " | 13.50 |

Tea Scales—All Seamless Scoops.

| Capacity. | Scoop. | Capacity. | Scoop. |
|---|---|---|---|
| ¼ oz. to 10 lbs. | Tin ..$8.00 | ¼ oz. to 10 lbs. | Brass .. 9.00 |

Druggists.

| Capacity. | Scoop. | Capacity. | Scoop. |
|---|---|---|---|
| 1-16 oz. to 8 lbs. | Tin ..$10.00 | 1-16 oz. to 8 lbs. | Brass..$11.00 |

Even balance trip scales, seamless scoop, with weights.

No. 1, capacity ½ oz. to 2 lbs., tin scoop, $5.50 brass scoop, $6.50.
No. 2, capacity ½ oz. to 4 lbs., tin scoop, $6.50; brass scoop, $7.50.
No. 2½, capacity ½ oz. to 18 lbs , tin scoop, $11; brass scoop, $12.50.

Counter.

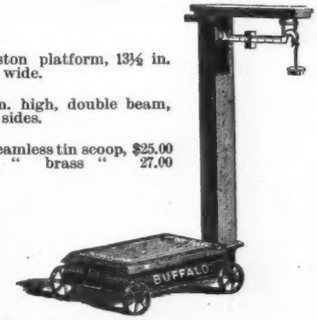
| Capacity. | Scoop. | Capacity. | Scoop. |
|---|---|---|---|
| ½ oz. to 36 lbs. | Tin ..$10.00 | ½ oz. to 36 lbs. | Brass..$12.00 |

Grocer.

| Capacity. | Scoop. | Capacity. | Scoop. |
|---|---|---|---|
| ½ oz. to 62 lbs. | Tin ... $12.00 | ½ oz. to 62 lbs. | Brass..$14.00 |

Meat or Butter Scales, with Slab.

| | | |
|---|---|---|
| ½ oz. to 62 lbs., | with Single Beam | $14.00 |
| " " " " | Double " | 15.00 |



Patent Boston platform, 13½ in. long by 10 in. wide.

Pillar, 18 in. high, double beam, marked both sides.

With large seamless tin scoop, $25.00
" " " brass " 27.00

Platform scales.—Without Wheels.

| No. | Capacity. | Platform. | Price. |
|---|---|---|---|
| | 400 lbs. | 21½ by 15 inches. | $23.00 |
| | 600 lbs. | 25 by 16 " | 30.00 |
| | 800 lbs. | 25 by 17 " | 34.00 |
| | 1,000 lbs. | 26 by 17 " | 39.00 |
| | 1,200 lbs. | 28 by 20 " | 45.00 |
| | 1,600 lbs. | 29 by 21 " | 55.00 |
| | 2,000 lbs. | 32 by 23 " | 70.00 |

With Wheels.

| No. | Capacity. | Platform. | Price. |
|---|---|---|---|
| 1 | 400 lbs. | 21½ by 15 inches. | $26.00 |
| 2 | 600 lbs. | 25 by 16 " | 33.00 |
| 3 | 800 lbs. | 25 by 17 " | 38.00 |
| 4 | 1,000 lbs. | 26 by 17 " | 43.00 |
| 5 | 1,200 lbs. | 28 by 20 " | 49.00 |
| 6 | 1,600 lbs. | 29 by 21 " | 60.00 |
| 7 | 2,000 lbs. | 32 by 23 " | 75.00 |

Brass sliding poise at same price if so specified in order

With Wheels and Drop Lever.

| No. | Capacity. | Platform. | Price. |
|---|---|---|---|
| 4 | 1,000 lbs. | 26 by 17 inches. | $51.00 |
| 5 | 1,200 lbs. | 28 by 20 " | 59.00 |
| 6 | 1,600 lbs. | 29 by 21 " | 70.00 |
| 7 | 2,000 lbs. | 32 by 23 " | 82.00 |
| 8 | 2,500 lbs. | 33¼ by 24¾ " | 94.00 |
| 9 | 3,000 lbs. | 38 by 30 " | 125.00 |

**Shears.** The Patent "Eureka

No. 1 cuts round metal up to ¼ in. steel to ⅛, $12.

No. 2 cuts round metal up to ⅛ in., steel to 3-16, $20.

Discount, 25%.

**Steel Wire Mats.**

| Galvanized Steel Wire. | | | (Style A) "Hartman Flexible." Each |
|---|---|---|---|
| No. 2. | Size | 16x24. | $1.50 |
| No. 3. | " | 18x30. | " 2.00 |
| No. 4. | " | 22x36. | " 3.00 |
| No. 5. | " | 26x48. | " 4.50 |
| No. 6. | " | 30x48. | " 5.25 |
| No. 7. | " | 36x48. | " 6.50 |
| No. 8. | " | 36x60. | " 8.00 |
| No. 9. | " | 36x72. | " 10.00 |

Brass mats "list" double the price of galvanized Style A) for similar sizes.
3 doz. lots, dis. 33⅓%.
6 doz. lots, dis. 40%.
12 doz. lots. dis. 40 and 5%.

**Screws.**

STEEL SCREWS ADD 50% TO LIST.
Prices are per 100.
Hexagon Cap Screws.
Heads on Steam-tight Screws not polished, unless so ordered. Can make these 12 inches long.

| Diam. head. | 7-16 | ½ | 9-16 | ⅝ | ¾ | 13-16 | ⅞ | 1 | 1⅛ | 1¼ | 1⅜ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Length head. | ¼ | 5-16 | ⅜ | 7-16 | ½ | 9-16 | ⅝ | ¾ | ⅞ | 1 | 1⅛ |
| Diam. screw. | ¼ | 5-16 | ⅜ | 7-16 | ½ | 9-16 | ⅝ | ¾ | ⅞ | | 1⅛ |
| ¾ | 3.00 | 3.25 | 3.75 | 4.40 | 5.50 | 7.00 | | | | | |
| 1 | 3.25 | 3.50 | 4.00 | 4.70 | 5.70 | 7.00 | 9.50 | | | | |
| 1¼ | 3.50 | 3.75 | 4.25 | 5.00 | 6.00 | 7.50 | 9.50 | 12.20 | | | |
| 1½ | 3.75 | 4.00 | 4.50 | 5.30 | 6.30 | 8.00 | 10.00 | 12.20 | 16.00 | | |
| 1¾ | 4.00 | 4.25 | 4.75 | 5.60 | 6.60 | 8.50 | 10.60 | 12.80 | 16.60 | 21.20 | |
| 2 | 4.25 | 4.60 | 5.05 | 5.95 | 7.00 | 9.10 | 11.20 | 13.40 | 17.20 | 22.30 | 29.00 |
| 2¼ | | 5.00 | 5.40 | 6.35 | 7.50 | 9.70 | 11.90 | 14.10 | 17.90 | 23.60 | 30.50 |
| 2½ | | | 5.80 | 6.80 | 8.00 | 10.40 | 12.70 | 14.90 | 18.80 | 25.10 | 32.30 |
| 2¾ | | | | 7.30 | 8.60 | 11.20 | 13.60 | 15.90 | 20.00 | 26.90 | 34.40 |
| 3 | | | | | 9.30 | 12.10 | 14.70 | 17.00 | 21.80 | 29.00 | 37.00 |
| Thread to in. | 20 | 18 | 16 | 14 | 12 | 12 | 11 | 10 | 9 | 8 | 7 |
| Add for each ¼ in. | 30 | 40 | 50 | 60 | 80 | 1.00 | 1.30 | 1.60 | 2.00 | 2.40 | 3.00 |

Dia., heads ground, 60 and 10%; dis., heads black, 60, 10 and 5%; dis., heads extra finish, 50 and 10%; dis., heads case-hardened, 55% and 16 dis.; dis., heads polished after hardening 45 and 10%.

SQUARE CAP SCREWS.

| Diam. head. | ⅝ | 7-16 | ½ | 9-16 | ⅝ | 11/16 | ¾ | ⅞ | 1⅛ | 1¼ | 1⅜ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Length head. | ¼ | 5-16 | ⅜ | 7-16 | ½ | 9-16 | ⅝ | ¾ | ⅞ | 1 | 1⅛ |
| Diam screw. | ¼ | 5-16 | ⅜ | 7-16 | ½ | 9-16 | ⅝ | ¾ | ⅞ | 1 | 1⅛ |
| ¾ | 2.40 | 2.75 | 3.20 | 3.80 | 4.40 | 5.75 | | | | | |
| 1 | 2.60 | 2.95 | 3.40 | 4.00 | 4.70 | 5.75 | 7.70 | | | | |
| 1¼ | 2.75 | 3.10 | 3.65 | 4.20 | 4.95 | 6.05 | 7.70 | 10.50 | | | |
| 1½ | 2.90 | 3.30 | 3.85 | 4.45 | 5.25 | 6.35 | 8.25 | 10.50 | 14.00 | | |
| 1¾ | 3.05 | 3.50 | 4.10 | 4.70 | 5.55 | 6.65 | 8.80 | 11.10 | 14.80 | 18.00 | |
| 2 | 3.25 | 3.70 | 4.35 | 4.95 | 5.90 | 7.05 | 9.40 | 11.80 | 15.70 | 19.00 | 22.50 |
| 2¼ | | 4.00 | 4.65 | 5.25 | 6.30 | 7.55 | 10.10 | 12.60 | 16.70 | 20.20 | 24.00 |
| 2½ | | | 5.00 | 5.60 | 6.75 | 8.15 | 10.90 | 13.50 | 17.80 | 21.50 | 25.80 |
| 2¾ | | | | 6.00 | 7.25 | 8.85 | 11.80 | 14.60 | 19.10 | 23.10 | 27.90 |
| 3 | | | | | 7.80 | 9.65 | 12.80 | 15.90 | 20.60 | 25.00 | 30.50 |
| Thread to in. | 20 | 18 | 16 | 14 | 12 | 12 | 11 | 10 | 9 | 8 | 7 |
| Add for each ¼ in. | 25 | 35 | 45 | 55 | 65 | 90 | 1.20 | 1.50 | 1.80 | 2.30 | 3.00 |

Dis., heads ground, 65 and 10%; dis., heads black, 65, and 5%; dis., heads extra finish, 55 and 10%; dis., head case hardened, 60 and 10%; dis., heads polished-hardened, 50 and 10%.

MILLED HEADS, COLLAR SCREWS 25 and 10% discount.

| Diameter of Collar. | ¼ | 11/32 | 7/16 | ½ | ⅝ | 11/16 | 13/16 | 15/16 | 1 | 1¼ |
|---|---|---|---|---|---|---|---|---|---|---|
| Diameter of Screw. | ⅛ | 3/16 | ¼ | 5/16 | ⅜ | 7/16 | ½ | 9/16 | ⅝ | ¾ |
| ¾ | 2.50 | 2.80 | 3.10 | 3.75 | 4.40 | 5.00 | 6.25 | | | |
| 1 | 2.80 | 3.10 | 3.40 | 4.05 | 4.70 | 5.30 | 6.60 | 8.25 | | |
| 1¼ | 3.10 | 3.40 | 3.70 | 4.35 | 5.00 | 5.60 | 7.00 | 8.60 | 11.25 | |
| 1½ | 3.45 | 3.70 | 4 00 | 4.70 | 5.30 | 5.95 | 7.40 | 9.00 | 11.90 | 15.00 |
| 1¾ | | 4.05 | 4.35 | 5.05 | 5.65 | 6.35 | 7.80 | 9.45 | 12.60 | 15.60 |
| 2 | | | 4.70 | 5.45 | 6.25 | 6.85 | 8.40 | 10.00 | 13.35 | 16.25 |
| 2¼ | | | | 5.95 | 6.85 | 7.40 | 9.00 | 10.60 | 14.15 | 17.10 |
| 2½ | | | | | 7.50 | 8.10 | 9.60 | 11.25 | 15.00 | 18.00 |
| 2¾ | | | | | | 8.75 | 10.30 | 11.90 | 15.90 | 19.00 |
| 3 | | | | | | | 11.00 | 12.60 | 16.85 | 20.00 |
| Threads to inch | 40 | 30 | 20 | 18 | 16 | 14 | 12 or 13 | 12 | 11 | 10 |
| Add for each ¼ inch | 30 | 40 | 50 | 60 | 80 | 1.00 | 1.30 | 1.60 | 2.00 | 2.40 |

MILLED FROM SOLID BAR.

| Fillister. | | | | Bevel Head. | | | | Button Head | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Diam. Head | 3-16 | ¼ | ⅜ | 7-16 | 9-16 | ⅝ | ¾ | 13-16 | ⅞ | 1 |
| Length Head | ⅛ | 3-16 | ¼ | 5-16 | ⅜ | 7-16 | ½ | 9-16 | ⅝ | ¾ |
| Diam. Screw | ⅛ | 3-16 | ¼ | 5-16 | ⅜ | 7-16 | ½ | 9-16 | ⅝ | ¾ |
| ¾ | 2.00 | 2.25 | 2.50 | 3.00 | 3.50 | 4.00 | 5.00 | | | |
| 1 | 2 25 | 2.50 | 2.75 | 3.25 | 3.75 | 4.25 | 5.30 | 6.60 | | |
| 1¼ | 2.50 | 2.75 | 3.00 | 3.50 | 4.00 | 4.50 | 5.60 | 6.90 | 9.00 | |
| 1½ | 2.75 | 3.00 | 3.25 | 3.75 | 4.25 | 4.75 | 5.90 | 7.20 | 9.50 | 12.00 |
| 1¾ | | 3.25 | 3.50 | 4.00 | 4.50 | 5.00 | 6.20 | 7.50 | 10.00 | 12.50 |
| 2 | | | 3.75 | 4.35 | 5.00 | 5.50 | 6.75 | 8.00 | 10.75 | 13.00 |
| 2¼ | | | | 4.75 | 5.50 | 6.00 | 7.25 | 8.50 | 11.50 | 13.75 |
| 2½ | | | | | 6.00 | 6.50 | 7.75 | 9.00 | 12.00 | 14.50 |
| 2¾ | | | | | | 7.00 | 8.25 | 9.50 | 12.75 | 15 25 |
| 3 | | | | | | | 8.75 | 10.00 | 13.50 | 16.00 |
| Threads to inch. | 40 | 30 | 20 | 18 | 16 | 14 | 12 | 12 | 11 | 10 |

Head on Bevel and Button Head Screws, 1-16 larger in diameter than above specifications.
Price, according to size of head.
Discount, 50 and 10%; case hardened, 45 and 10%; case hardened and polished, 35 and 10%.

**Spades and Shovels.**

JONES

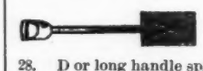
Patent plain black solid cast-steel shovels and spades.

Patent solid steel shovel.

| No. | | Per Doz. Black. | Per Doz. Pol's'd |
|---|---|---|---|
| 20. | D. or long handle sq.-point shovels. 2 | $15.50 | $16.50 |
| 21. | " " " " " " 3 | 16.25 | 17.25 |
| 22. | " " " " " " 4 | 17.00 | 18.50 |
| 23. | " " " " " " 6 | 17.50 | 19.00 |
| 24. | " " " " charcoal. 8 | 20.50 | 22.0 |

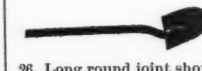
Pt. plain back solid cast steel shovel.

25. D or long handle round-point shovels. 3 16. 5 17.25



Patent solid cast steel spade.

28. D or long handle spades.....2 6.00 17.0
29. " " " " .....3 16.50 18.0



Patent plain back solid cast steel.

26. Long round joint shovel No. 2.....15.50 16.50
27. " square " " No. 2 .....15.50 16.50
32. D. handle square-point molders' shovels.....2 ..... 17.00
33. D. handle square point railroad, extra heavy.....2 15.75
34. D. handle round point railroad, extra heavy .....3 16.50
35. L. handle round point shovel, with foot cap.....2 16.00 17.00

GRAY'S CAST.

Patent plain back solid-steel shovels and spades.

50. D. or long handle sq.-point shovels. 2 $12.00 $13.00
51. " " " " " " 3 12.75 14.00
52. " " " round point " 3 12.75 14.00
55. D. handle spades.....2 12.25 13.25
56. " " " .....3 13.00 14.25

Patent solid corrugated cast steel scoop.

SCOOPS.

Jones' patent plain back solid corrugated cast steel scoops.

90. D. or long handle solid cast steel...2 $13.50 $14.50
91. " " " " " ...4 14.50 15.50
91½. " " " " " ...6 16.50 17.50

Jones' riveted scoops.

92. Cast steel D. or long handle.....2 13.50 14.50
93. " " " " .....4 14.50 15.50
94. " " " " .....6 16.50 17.50
Half polished.
95. " " " .....8 $20.00
96. " " " .....10 22.50
97. " " " Locomotive or coal (heavy).....6 17.50
98. " Long or D. handle for salt heavy).....17.50
99. " D. handle flour and house furnace.....10.50
100. " D. handle r'd-pt. for coal (extra heavy).....6 20.00
101. " ash pit, furnace L. handle.....2 Polished. 13.00
102. " " 32 in. D..2 13.50
103. " " 42 " iron D. handle.....2 14.00

Di ching spade.

124. D handle ditching (flat).....18.00 19.50
125. D handle post hole (concave).....18.00 19.50
126. D handle Alcock (for clay and brick)....16.00 17.00
Discount on shovels and spades, 50 and 10.
" " scoops, 50.
Boxed f.o.b. New York, Boston or Montreal.
The solid shovels, spades and scoops are made from cast steel bars by a recently patented process, the blade and strap being in one piece, not welded. All goods are American patterns.

**Stencil Inks.**

Black.

| No. | Per can. | Per cake. | No. | Per can. | Per cake. |
|---|---|---|---|---|---|
| 1 | 7 cents | 3 cents | 3 | 20 cents. | 12 cents |
| 2 | 10 " | 5 " | 4 | 30 " | 20 " |

Blue.

| | | | | | |
|---|---|---|---|---|---|
| 10 cents | | 6 cents | 3 | 30 cents. | 22 cents |
| 15 " | | 9 " | 4 | 50 " | 40 " |

Red and Green.

| | | | | | |
|---|---|---|---|---|---|
| 1 | 12 cents | 8 cents | 3 | 50 cents. | 42 cents |
| 2 | 20 " | 15 " | 4 | 90 " | 80 " |

Per doz. cans or cakes, net, per gross, 20% less.

Indelible Ink.

| | | |
|---|---|---|
| Small bottles per | 100 | $2.75 |
| " " | 500 | 12.00 |
| " " | 1,000 | 20.00 |

STENCIL COMBINATIONS.

Contains Alphabet, Figures, Brush, and Ink.

| | | |
|---|---|---|
| ½ inch, per doz | | $4.80 |
| ¾ " " | | 5.40 |
| 1 " " | | 5.40 |
| 1¼ " " | | 7 50 |
| 1½ " " | | 8.40 |
| 1¾ " " | | 10.00 |
| 2 " " | | 10.00 |
| 2½ " " | | 15.00 |

Dis., 20%.

**Tools.** ARTISANS.

Chisel (Mason).
Stone, 5 and 8c. lb., net.

Mill Picks.
Cast steel, 2 to 3 lb. $22 per doz.
Dis., 60 and 5%.

Stone Axes, Cast Steel.
All sizes, 50c. per lb.
Dis., 70 and 10%.

Five lbs. and over, 40c.; with teeth, 45c.; 3 to 5 lbs., 45c.; with teeth, 50c.; under 3 lbs., 50c.; with teeth, 55c.
Nos. 40 and 41, spalling or stone hammer, 5 lbs. and ver, 36c.; 3 to 5 lbs., 40c.; under 3 lbs., 45c. per lb.
Nos. 40 and 41, spalling hammers, 9 to 20 lbs., steel face per lb., 17c. Dis., 70 and 10%

Ship or Top Mauls, Steel Face 4 to 8 lbs., 28c. per lb.
Dis., 50, 10 and 5%.

Steel Wedges, wood, 1s qual., 5c. lb.

Cooper Frees.

| | | |
|---|---|---|
| 8 in.. | ₰ doz. | $13.0 |
| 10 in.. | ₰ doz. | 13.5 |
| 12 in.. | ₰ doz. | 14.00 |
| 14 in.. | ₰ doz. | 14.56 |
| 16 in.. | ₰ doz. | 15.00 |

Discount, 60%.

6 days, 2% 10 days.

Vise.

No 1. Solid Box Vises.

| | | Each. |
|---|---|---|
| No. 25, 3⅜ in. | Jaw | $12.00 |
| " 30, 3½ | " | 11.00 |
| " 55, 3⅞ | " | 10.00 |
| " 40, 4 | " | 10.50 |
| " 45, 4¼ | " | 11.00 |
| " 50, 4¼ | " | 11.50 |
| " 55, 4½ | " | 12.00 |
| " 60, 4½ | " | 13.00 |
| " 65, 4¾ | " | 14.00 |
| " 70, 5 | " | 15.00 |
| " 75, 5 | " | 16.00 |
| " 80, 5¼ | " | 17.50 |
| " 85, 5¼ | " | 18.50 |
| " 90, 5½ | " | 20.00 |
| " 95, 5¾ | " | 21.00 |
| " 100, 6 | " | 22.00 |
| " 105, 6 | " | 23.00 |
| " 110, 6¼ | " | 24.00 |
| " 115, 6¼ | " | 25.00 |
| " 120, 6½ | " | 26.00 |
| " 125, 6½ | " | 27.50 |
| " 130, 6¾ | " | 29.00 |

| | | Each. |
|---|---|---|
| No. 135, 6¾ in. | Jaw | $31.50 |
| " 140, 7 | " | 33.00 |
| " 145, 7 | " | 35.00 |
| " 150, 7 | " | 36.00 |
| 160, 7¼ | " | 41.50 |
| " 170, 7¼ in. | Jaw | $44.50 |
| " 180, 8 | " | 47.00 |
| " 190, 8 | " | 53.00 |
| " 200, 8 | " | 56.00 |

Dis., 60 and 10%.

MINERS.

Adze Eye Coal Picks.
Same list and dis. as No. 16.

Anthracite Coal Picks.
Same list and dis. as No. 16.

Stone Picks, per doz.
No. 18, 6 to 7 lbs...$16.50.
No. 18, 7 to 8 lbs... 17.50.
No. 18, 8 to 9 lbs... 18.50.
Dis., 60 and 10%.

Coal Picks.

| No. | | Per doz. |
|---|---|---|
| 16, Weight, 2 | lbs. | $8.50 |
| 16, " 2½ | " | 9.00 |
| 16, " 3 | " | 9.50 |
| 16, " 3½ | " | 10.00 |
| 16, " 4 | " | 10.50 |
| 16, " 4½ | " | 11.00 |
| 16, " 5 | " | 11.50 |
| 16, " 5½ | " | 12.00 |
| 16, " 6 | " | 12.50 |
| 16, " 6½ | " | 13.00 |
| 16, " 7 | " | 14.00 |

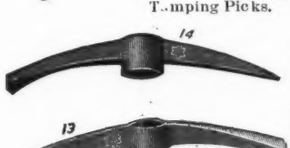
Packages chiarged at cost. Dis., 60, 10%.

Adze Eye Miners Picks—Surface, Drifting and Poll.

| No. | | | Per doz. |
|---|---|---|---|
| 19, Surface. | No. 1, 4 | lbs. | $14.00 |
| 19, " | No. 2, 4½ | " | 15.00 |
| 19, " | No. 3, 5 | " | 16.00 |
| 19, " | No. 4, 5½ | " | 17.00 |
| 19, " | No. 5, 6 | " | 18.00 |
| 19, " | No. 6, 6½ | " | 19.00 |
| 19, " | No. 7, 7 | " | 20.00 |
| 20, Drifting, | No. 1, 3 | " | 12.50 |
| 20, " | No. 2, 4 | " | 14.00 |
| 20, " | No. 3, 4½ | " | 15.00 |
| 20, " | No. 4, 5 | " | 16.00 |
| 20, " | No. 5, 6 | " | 17.50 |
| 21, Poll, | No. 1, 3½ | " | 15.00 |
| 21, " | No. 2, 4 | " | 16.00 |
| 21, " | No. 3, 4½ | " | 17.00 |
| 21, " | No. 4, 5 | " | 18.50 |
| 21, " | No. 5, 6 | " | 20.00 |
| 21, " | No. 6, 6¾ | " | 21.50 |

Dis., 60, 10 and 5%.

Tamping Picks.



Adze eye, 6 to 7 lbs., per doz., $17.
Adze eye, 7 to 8 lbs., per doz., $18.
Adze eye, 8 to 9 lbs., per doz., $19.
Hunt eye, 6 to 7 lbs., per doz. $17.
Hunt eye, 7 to 8 lbs., per doz., $18.
Hunt eye, 8 to 9 lbs., per doz., $19.
Dis., 60, 10 and 5%.

Ore Picks.

| No. | | | |
|---|---|---|---|
| 54, Adze Eye, | 5 to 6 lbs. | ℔ doz. | $12.00 |
| 54, " | 6 to 7 " | " | $13.00 |
| 54, " | to 8 " | " | $14.00 |

56, Steel Lake Superior Mining Pick

(Special Price and Quality.)

Dis, 60, 10 and 5%.

Steel Face Hammers.

No. 43, hand drilling hammers, 2 to 5 lbs.; No. 45, napping hammers, 2 to 5 lbs.; No. 39, mason hammers, 3 to 8 lbs.; No. 42, smiths' hand hammers, 2 to 5 lbs.; No. 44, smiths' striking hammers, 2 to 5 lbs., all steel face, per lb., 26c. Dis., 70, 10 and 5%.

No. 43, hand drilling hammer, 5 lbs. and over, 36c.; 3 to 5 lbs., 40c.; under 3 lbs., 45c. per lb.
Dis., 70, 10 and 5%.

Cast Steel.

No. 42, blacksmiths hand hammer, 5 lbs. and over 30c.; 3 to 5 lbs., 34c.; under 3 lbs., 45c. per lb.
No. 44, drilling or striking hammer, 5 lbs. and over, 30c.; 3 to 5 lbs., 36c.; under 3 lbs., 45c. per lb.
No. 45, napping hammer, 5 lbs. and over, 30c.; 3 to 5 lbs, 35c. under 3 lbs., 45c. per lb.
Dis., 70 and 10% 5.

Steel Face Sledges.
No. 34. Smiths' sledges, 6 to 30 lbs., steel face, 17c. per lb.
No. 35. Stone sledges, 6 to 30 lbs., steel face, 17c. per lb.
No. 36. Striking sledges, 6 to 30 lbs., steel face, 17c. per lb.
No. 37. Coal sledges, 5 to 10 lbs., steel face, 18c. per lb.

Cast Steel Sledges.
No. 34. Blacksmiths' sledge. 5 lbs. and over, 30c.; 3 to 5 lbs., 36c.; under 3 lbs., 45c. per lb,
No. 35. Stone sledge, 5 lbs. and over, 30c.; 3 to 5 lbs., 36c.; under 3 lbs., 45c. per lb.
No. 36. Striking sledge, 5 lbs. and over, 30c.; 3 to 5 lbs., 36c.; under 3 lbs., 45c. per lb.
No. 37. Coal sledge, 5 lbs. and over, 30c.; 3 to 5 lbs. 3Cc.; under 3 lbs., 45c. per lb.

RAILROADS.

Railway Track Punch

Round Point.
15c. lb., net.

Track Wrench.

7¾ lb., net.

Ra Fork.

9c. lb. net.

Crow Bars.
Wedge Points, 3½c. lb., net.
Pinch Point, 3 ⅛c. lb., net.

65 Tamping Bar, 6c. lb., net.

66 Claw Bar,
7c. lb., net.

Railroad Spike Mauls
6 to 16 lbs., Steel Face 18c. lb.
Dis., 50, 10, and 5%.

Steel Track Chisel,
15c. per lb., net.

Railroad or Clay Picks.

| No. | | | Per doz. |
|---|---|---|---|
| 11, Adze eye, | 4 to 5 | lbs. | $11.00 |
| 11, " | 5 to 6 | " | 12.00 |
| 11, " | 6 to 7 | " | 13.00 |
| 11, " | 7 to 8 | " | 14.00 |
| 11, " | 8 to 9 | " | 16.00 |
| 11, " | 9 to 10 | " | 18.00 |
| 12, Hunt eye, | 4 to 5 | " | 11.00 |
| 12, " | 5 to 6 | " | 12.00 |
| 12, " | 6 to 7 | " | 13.00 |
| 12, " | 7 to 8 | " | 14.00 |

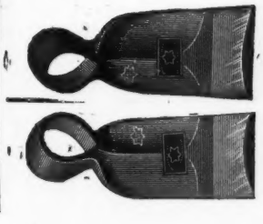
Dis., 60, 10 and 5%.

Mattocks—Price per doz.
2, Adze Eye, Long Cutter, 6 lbs., $16.00.
3, Adze Eye, Short Cutter, 5½ lbs., $15.50.
2, Adze Eye, Long Cutter, Light, $15.00.
3, Adze Eye, Short Cutter, Light, $15.00.
4, Hunt Eye, Long Cutter, 6 lbs., $16.00.
5, Hunt Eye, Short Cutter 5½ lbs., $15.50.

Adze Eye Pick Mattocks.....$16.

Hunt Eye Pick Mattocks.....$16

Dis., 60, 10 and 5%

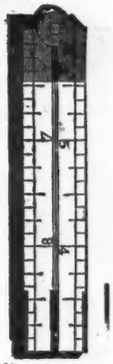


Grub Hoes.
Western Pattern. No. 0, 3 lbs., ℔ doz., $10.50.
Western Pattern, No. 1, 3½ lbs., ℔ doz., $11.
Western Pattern No. 2, 4 lbs., ℔ doz., $11.50.
Western Pattern, No. 3, 4½ lbs., ℔ doz., $12.
Baltimore Pattern, No. 1, 3½ lbs., ℔ doz., $11.
Baltimore Pattern, No. 2, 4½ lbs., ℔ doz., $11.75
Baltimore Pattern, No. 3, 5 lbs., ℔ doz., $12.75.
Baltimore Pattern, No. 4, 5¾ lbs., ℔ doz., $13.75.
Dis., 60 and 10%, 5.

CARPENTERS'.

BEADER (Universal Hand.)

For Beading, Reeding, Fluting, or for light Rou ering.
No. 66 Iron Stock, with seven Steel Cutters, 1.00.



BOXWOOD RULES.

Two feet, four-fold, 1 inch wide.

| Plate. | Middle. | Edge. | Bound. |
|---|---|---|---|
| Round joint | $4 | ... | ... |
| Square " | 5 | $7 | $15 |
| Arch " | 6 | 8 | 16 |

Two feet, four-fold, 1⅜ inches wide.

| Plate. | Middle. | Edge. | Bound. |
|---|---|---|---|
| Square joint | $7 | $9 | $18 |
| Arch " | 9 | 11 | 20 |

Two feet, two-fold, 1½ inches wide.

| Square joint. | Arch. | Arch Bound. |
|---|---|---|
| $5 | $7 | $16 |
| 12 | 14 | 24 |

Gunter's Slide.
Dis. 80, 10 and 10%.

LEVELS.

| | 10 to 16 in. | 24 in. |
|---|---|---|
| Arch top plate, 2 side views | $9.00 | $12.00 |

PLUMBS AND LEVELS.

Arch top plate, 2 side views.

| | 12 to 18 in. | 18 to 24 in. | 24 to 30 in. |
|---|---|---|---|
| Polished | $14.00 | $16.00 | $18.00 |
| Mahogany | ... | 16.50 | 22.50 |
| Mahogany tp'd and lp'd | 27.00 | ..... | ..... |
| Polished and lipped | ..... | ..... | 24.00 |
| Polished and tipped | ..... | ..... | 28.00 |
| Polished, lip'd and tip'd | ..... | ..... | 35.00 |

| | in. | |
|---|---|---|
| Mason's level, 2 plumbs, polished, | 36, | $30.00 |
| Mason's level, 2 plumbs, p'd and t'd, | 36, | 36.00 |
| Mason's level, 2 plumbs, polished, | 42, | 36.00 |

PATENT ADJUSTABLE PLUMBS AND LEVEL.

| Arch Top plate, 2 side views | 26 to 30 in. |
|---|---|
| Polished and lipped | $27.00 |
| Polished and tipped | 30.00 |
| Polished, lipped and tipped | 39.00 |
| Mahogany | 27.00 |
| Mahogany, lipped | 33.00 |
| Mahogany, lipped and tipped | 48.00 |
| Polished, triple stock, lipped and tipped | 48.00 |
| Mahogany " " " " " | 60.00 |
| Rosewood, lipped and tipped | 90 00 |

Dis., 70, 10, 10%

POCKET LEVELS.

| | |
|---|---|
| Iron top, Japanned | 2 00 |
| Brass top | 3.00 |

Dis., 70, 10, 10%.

BAILEY'S PATENT WOOD PLANES.

| Smooth. | Handle smooth. |
|---|---|
| 9 × 8¾ in. | 8 × 2 in. 9 × 2 in. |
| $2 | $2 $2.50 each |

| Jack. | Fore. | Jointer. |
|---|---|---|
| 15 × 2½ in. | 20 × 2⅜ in. | 26 × 2⅜ in. |
| $2.50 | $2.75. | $3.25 each |

Dis., 40, 10 and 10%.

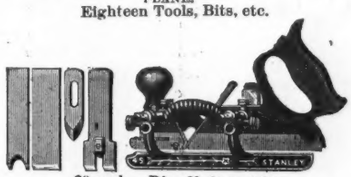
PLANES, BAILEY'S PATENT IRON.

With pat. lateral adjustment.

Smooth, 8 in. × 1¾ in., $3; in. × 2 in., $3.25; 10 in. × 2⅜ in., $3.75 each.
Jack, 14 in. × 2 in., $3.75.
Fore, 18 in. × 2⅜ in., $4.75
Jointer, 22 in. × 2⅜ in., $6.50 each.
Dis., 40, 10 and 10 %.

STANLEY'S BEADING, RABBET, SLITTING AND MATCHING PLANE.

Eighteen Tools, Bits, etc.

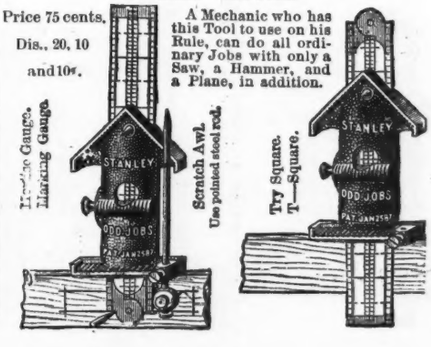


$8 each. Dis., 20, 10 and 10%.

STANLEY "ODD JOBS."

Price 75 cents.
Dis., 20, 10 and 10%.

A Mechanic who has this Tool to use on his Rule, can do all ordinary Jobs with only a Saw, a Hammer, and a Plane, in addition.



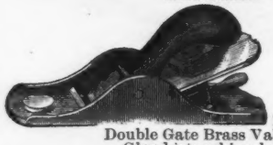
STANLEY IRON BLOCK PLANES.

3½ × 1 in. 20c.

5½ × 1¼ 40c.

7½ × 1¾ in. 60c. each

ADJUSTABLE



5½ × 1¼ in. 60c.

7½ × 1¾ in. 85c. each.

Dis., 40, 10 and 10 %

Double Gate Brass Valves. Gland in packing box.

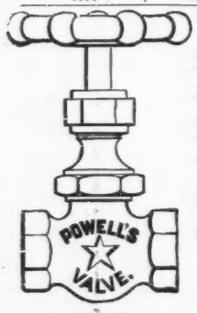
| Size. | Screw socket. | Flange. | Diameter of Standard Flange. | Face to face of Screw socket | Face to face of Flanges. | Extra for slide stem and lever subject to discount. |
|---|---|---|---|---|---|---|
| In. | $ | $ | In. | In. | In. | |
| ½ | 1.25 | ..... | ..... | 2¼ | ..... | $1.00 |
| ¾ | 1.65 | ..... | ..... | 2½ | ..... | 1.00 |
| 1 | 2.15 | ..... | ..... | 2⅞ | ..... | 1.00 |
| 1¼ | 3.15 | ..... | ..... | 3⅜ | ..... | 1.00 |
| 1½ | 4.25 | ..... | ..... | 3¾ | ..... | 1.00 |
| 2 | 6.25 | 11.50 | 6 | 4½ | 4⅝ | 1.00 |
| 2½ | 11.50 | 18.00 | 6½ | 4 13-16 | 5⅝ | 1.25 |
| 3 | 16.00 | 22.00 | 7 | 5 | 6¼ | 1.25 |
| 3½ | 21.00 | 31.00 | 7½ | ..... | ..... | 1.25 |
| 4 | 35.00 | 43.00 | 9 | ..... | 7 1-16 | 1.25 |
| 5 | 52.00 | 64.00 | 10 | ..... | ..... | 1.25 |
| 6 | 78.00 | 90.00 | 11 | ..... | 9 | 1.25 |
| 8 | ..... | ..... | ..... | ..... | ..... | ..... |
| 10 | ..... | ..... | ..... | ..... | ..... | ..... |
| 12 | ..... | ..... | ..... | ..... | ..... | ..... |

Rubber-Faced Slide Gate Fire Hydrant.

| Diameter of pipe connection. | Diameter of stand pipe. | Diameter of seat ring. | One 2½ nozzle. | Two 2½ nozzles. | Three 2½ nozzles. |
|---|---|---|---|---|---|
| Inches. | Inches. | Inches. | | | |
| 3 or 4 | 4⅝ | 3 | $28 | ..... | ..... |
| 3–4–6 | 5¾ | 4 | 31 | $33.00 | $35.00 |
| 4 or 6 | 7 | 5 | ..... | 38.50 | 40.50 |
| 6 or 8 | 8 | 6 | ..... | 49.00 | 51.00 |
| 8 or 10 | 10 | 8 | ..... | ..... | ..... |

| Four 2½ nozzles. | Six 2½ nozzles. | One steamer nozzle. | One steamer and one 2½ nozzle. | One steamer and two 2½ nozzles. | Frost case, standard length. |
|---|---|---|---|---|---|
| ..... | ..... | ..... | ..... | ..... | $4.50 |
| ..... | ..... | $33.00 | $35.00 | $37.00 | 5.00 |
| ..... | ..... | 38.50 | 40 50 | 42.50 | 6.50 |
| $53.00 | ..... | 49.00 | 51.00 | 53.00 | 7.50 |
| ..... | ..... | ..... | ..... | ..... | ..... |

| For each 6 inches more or less than standard length of stand pipe, add or deduct from list. | For each 6 inches more or less than standard length of frost case, add or deduct from list. | Extra charge for hub. | Independ't nozzle gates each. |
|---|---|---|---|
| ..... | ..... | ..... | ..... |
| $0.60 | $0.44 | ..... | ..... |
| .75 | .50 | 6 in. $0.50 | $3.50 |
| .85 | .70 | No ch'ge | 3.75 |
| 1.00 | .90 | 8 in. $1.25 | 3.75 |
| ..... | ..... | ..... | 4.50 |

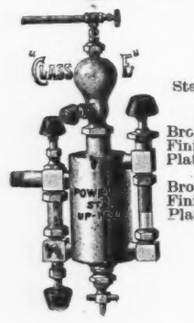



Star Globe, Angle and Check Valves.

| Size, inches. | ⅛ | ¼ | ⅜ | ½ |
|---|---|---|---|---|
| Globe and angle | .80 | .85 | .90 | 1.20 |
| Check V | .70 | .70 | .75 | .95 |
| Size | ¾ | 1 | 1¼ | 1½ |
| Globe and angle | 1.55 | 2.00 | 3 00 | 4.00 |
| Check V | 1.20 | 1.65 | 2.50 | 3.25 |
| Size | 2 | 2½ | 3 | |
| Globe and angle | 6.50 | 12 50 | 19.00 | |
| Check V | 5.00 | 11.00 | 15.00 | |

Dis., 50%.

Also made heavy and extra heavy for special uses.




Star Sight Up-feed Lubricators. Class E.

| Size. | ½ ft. | ½ ft. | 1 ft. |
|---|---|---|---|
| Bronzed | 13.00 | 15.00 | 20.00 |
| Finished | 15.00 | 17.00 | 22.00 |
| Plated | 17.00 | 15.00 | 25.00 |
| | 1 qt. | | ½ gal. |
| Bronzed | 25.00 | | 34.00 |
| Finished | 28.00 | | 38.00 |
| Plated | 32.00 | | 43.00 |

Less 75% discount.

Signal Sight Feed Oiler.

| Numbers | 0 | 1 | 1½ | 2 |
|---|---|---|---|---|
| Diameter of glass, inches | 1¼ | 1½ | 1¾ | 2 |
| Height of glass, inches | 1⅛ | 1⅜ | 1⅝ | 1⅞ |
| Capacity | ⅛ oz. | ¼ oz. | 1 oz. | 2 oz. |
| Size of shank, pipe thread, inches | ¼ | ¼ | ⅜ | ⅜ |
| Signal Sight Feed Oiler, each | $3.00 | $3.25 | $3.50 | $3.75 |
| Signal Sight Feed Oiler, nickel plated, each | 3.50 | 3.75 | 4.00 | 4.25 |
| Numbers | 3 | 4 | 5 | 6 |
| Diameter of glass, inches | 2¼ | 2½ | 3 | 3½ |
| Height of glass, inches | 2⅛ | 2¼ | 2¾ | 4 |
| Capacity | ¼ pt. | ⅛ pt. | ½ pt. | 1 pt. |
| Size of shank, pipe thread, inches | ⅜ | ½ | ½ | ½ |
| Signal Sight Feed Oiler, each | $4.25 | $5.25 | $7.25 | $9.25 |
| Signal Sight Feed Oiler, nickel plated, each | 4.75 | 5.75 | 8.00 | 10.25 |

Less 65% dis.

EDDY VALVES.

Class 1. Class 2. Class 3 and 4.

| Class 1. Brass valves, steam metal. Size in inches. | Screw ends. | Flange ends. | Class 2. Iron, brass mounted. Size. | Screw, or flange ends. | Add for S S&L | Class 3. All ir'n for gas. Hub ends. | Class 4. Water works valves. Hub ends. |
|---|---|---|---|---|---|---|---|
| ½ | $1.30 | ..... | ½ | $7.00 | $1.00 | $8.00 | $10.00 |
| ¾ | 1.70 | ..... | 2½ | 10.50 | 1.30 | ..... | ..... |
| 1 | 2.20 | ..... | 3 | 13.00 | 1.40 | 10.00 | 15.00 |
| 1¼ | 3.20 | ..... | 3½ | 16.50 | 1.50 | ..... | ..... |
| 1½ | 4.20 | $7.50 | 4 | 18.00 | 1.70 | 15.00 | 18.00 |
| 2 | 6.20 | 9.00 | 4½ | 22.00 | 1.80 | ..... | ..... |
| 2½ | 11.50 | 15.00 | 5 | 25.00 | 2.00 | 20.00 | 25.00 |
| 3 | 16.00 | 20.00 | 6 | 31.00 | 2.30 | 25.00 | 31.00 |
| 3½ | 22.00 | 28.00 | 7 | 37.00 | 2.70 | 30.00 | 37.00 |
| 4 | 35.00 | 42.00 | 8 | 45.00 | 3.00 | 35.00 | 45.00 |
| 5 | 50.00 | 60.00 | 10 | 60.00 | 3.50 | 48 00 | 60.00 |
| 6 | 80.00 | 90.00 | 12 | 80.00 | 4.00 | 65.00 | 80.00 |
| 8 | 130.00 | 130.00 | | | | | |

All Iron Valves, Class 2. 10 per cent. less than Brass Mounted.

**Varnish.**

E.S. 1827 &Co.

| For Finishing Coats. | gal. |
|---|---|
| Wearing body varnish | $5.50 |
| Medium drying body | 5.50 |
| One coat coach varnish | 4.50 |
| Wearing carriage | 4.50 |
| Heavy gear varnish | 4.00 |
| Coach body " | 4.00 |
| No. 1 coach " | 2.25 |

| For Under Coats. | | | |
|---|---|---|---|
| Hard drying body | $4.50 | Black rubbing varnish | $4.00 |
| Rubbing body varnish | 4.00 | Priming (1st coat) | 2.50 |
| Quick rubbing " | 3.50 | Filling (2d coat) | 2.50 |
| | | Rough stuff | 2.50 |

| For Inside Work. | | | |
|---|---|---|---|
| Best flowing varnish | $4.50 | Hard oil finish light | $2.75 |
| Best polishing " | 4.50 | " dark | 2.25 |
| Cabinet " | 3.00 | White copal | 4.00 |

| Dryers. | | | |
|---|---|---|---|
| Japan gold size | $3.50 | Brown japan | $1.25 |
| Coach japan | 1.75 | Liquid dryer | 1.25 |

Discount, 40 per cent. f.o.b. N. Y.

| Preservative Coatings. | | | |
|---|---|---|---|
| Spar coatings | $4.00 | Exterior car coating | $4.00 |
| I. X. L. No. 1 | 2.50 | Interior car coating | 3.25 |
| I. X. L. No. 2 | 4.00 | Locomotive coating | 4.00 |
| Floor finish | 2.50 | | |

Discount, 35 per cent, f.o.b. N. Y.

**Wheelbarrows.**

Climax Bolted Barrow, with Wood Wheel per doz. $22.50.
1½ tire of iron,
Common Nailed Barrow per doz. $18.50.
" Bolted " " " 18.75.

| | | | |
|---|---|---|---|
| Lansing's Patent Iron-Bolted Barrow, per doz. | | | $25.50 |
| Capital Patent Bolted Dirt | " | " | 33.00 |
| Red oak or Government | " | " | 40.50 |
| Wharf | " | " | 72.50 |
| Mortar | " | " | 30.00 |
| Bent Handle Stone | " | " | 48.00 |
| Coal or Ore | " | " | 31.50 |
| Pig Metal or Casting | " | " | 40.50 |
| Brick Yard 20 inch Iron Wheel | " | " | 10 50 |

Globe Patent Bolted Garden Barrow } per doz., 42.50.
Box 30 by 24 by 12 deep, wood wheel }

Capita Patent Barrows

With Iron Tray, A, per doz., ..... $39.00
" " " B, " " ..... 42.00

The Leader Iron and Steel Barrows.
Gas-pipe Legs and Handles in one price.

No. 1 Tray of 16 iron, capacity 3 cu. ft. of earth, each $12.
No. 2 " " 14 " " 5 " " " " "
or 250 lbs. of coal ..... " 15
Galvanized 18 iron, capacity same as No. 2 ..... " 15

**Water Wheels.** Pelton.

| | Under pressure of 30 Lbs. | 60 Lbs. | 100 Lbs. |
|---|---|---|---|
| No. 1, $25 | ½ H. P. | 1 H. P. | 2 1-10 H. P |
| No. 2, $50 | ¾ " | 2⅛ " | 5 " |
| No. 3, $100 | 1½ " | 4 " | 8⅛ " |
| No. 4, $150 | 2½ " | 7 " | 14¾ |
| No. 5, $260 | 4½ " | 12½ " | 26 |

Dis. 20%.

**Whiffletree.**

Willson Spring Jeffery Manufacturing Company.

| | Single. | Doub le. |
|---|---|---|
| No. 1, 34 or 36 inches long | $1.25 | $2.50 |
| No. 2, " " " " | 1.40 | 2.75 |
| No. 3, " " " " | 1.50 | 3.00 |
| No. 4, " " " " | 1.65 | 3.25 |

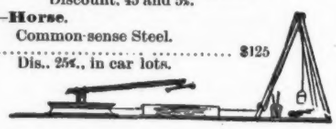
Including either steel hooks or rings
Discount, 45 and 5%.

**Whims—Horse.**

Common-sense Steel.

F. O. B .. ..... $125

Dis., 25%., in car lots.



**Windmills.**

| | | |
|---|---|---|
| 10 ft. pumping | $75 | |
| 12 ft. " | 95 | Plus cost of packing. |
| 14 ft. " | 140 | |
| 16 ft. " | 225 | |

Dis., 50 per cent.
Delivered on board of vessel at New York packed for export.
Dis., 45%.

"Stover" Pumping Windmills (no tower).

| Size wheel. | Wt. packed. | Cubic ft. | Price. |
|---|---|---|---|
| 10 ft. | 650 | 50 | $80.00 |
| 12 ft. | 750 | 58 | 100.00 |
| "Zenith Pumping Windmills (no tower) | | | |
| 10 ft. | 650 | 48 | 85.00 |
| 12 ft. | 750 | 57 | 110.00 |
| Dis., 50 per cent. | | | |
| 14 ft. | 1,400 | 108 | 160.00 |
| 16 ft. | 1,600 | 114 | 250.00 |
| Dis., 45 per cent. | | | |
| 20 ft. | 2,950 | 220 | 400.00 |
| 25 ft. | 4,225 | 280 | 600.00 |
| Dis., 40 per cent. | | | |

"Zenith" Geared Windmill (no tower).
Prices include upper set of Gears and about 5 feet vertical extra heavy shaft in windmill head.

| | | | |
|---|---|---|---|
| 14 ft. | 1,550 | 178 | 260.00 |
| 16 ft. | 1,780 | 198 | 300.00 |
| 20 ft. | 3,170 | 216 | 500.00 |

Dis., 40 per cent.

**Wire Rope.**

| Circumference in inches. | Diameter in inches. | Price in cents per foot best crucible cast steel rope. 19 wires to strand. | 7 wires to strand. | Price in cents per foot best bright iron rope. 19 wires to strand. | 7 wires to strand. | Price in cents per pound galvanized iron rope. 12 wires to strand. | 7 wires to strand. |
|---|---|---|---|---|---|---|---|
| 5½ | 1¾ | 100 | ..... | 69 | ..... | 11 | 10½ |
| 5¼ | ..... | 90 | ..... | 64 | ..... | " | " |
| 5 | 1⅝ | 80 | ..... | 58 | ..... | 11½ | " |
| 4¾ | 1½ | 71 | ..... | 53 | ..... | " | " |
| 4½ | ..... | 65 | ..... | 48 | ..... | " | " |
| 4¼ | 1⅜ | 60 | 60 | 43 | 39 | " | " |
| 4 | 1¼ | 50 | 50 | 36 | 34 | " | " |
| 3¾ | ..... | 46 | ..... | 33 | ..... | " | " |
| 3½ | 1⅛ | 41 | 40 | 29 | 27 | 12 | 10¾ |
| 3¼ | ..... | ..... | ..... | ..... | ..... | " | 11 |
| 3⅛ | 1″ | 34 | 32 | 26 | 23 | ..... | ..... |
| 3 | ..... | 33 | ..... | 24 | ..... | " | 11 |
| 2¾ | ⅞ | 27 | 25 | 20 | 19 | ..... | 12 |
| 2½ | ..... | 23 | ..... | 18 | ..... | ..... | 13 |
| 2¼ | ¾ | 21 | 19 | 16 | 14 | ..... | ..... |
| 2 | ⅝ | 18 | 14 | 14 | 10½ | ..... | ..... |
| 1¾ | 9-16 | 17 | 11 | 12 | 8 | ..... | ..... |
| 1½ | ½ | 15 | 8 | 10 | 7 | ..... | ..... |
| 1¼ | ⅜ | ..... | ..... | 8 | 5 | ..... | ..... |
| 1 | 5-16 | ..... | ..... | ..... | 4 | ..... | ..... |

Discounts, for export in bond, requiring from six weeks time, 55%.